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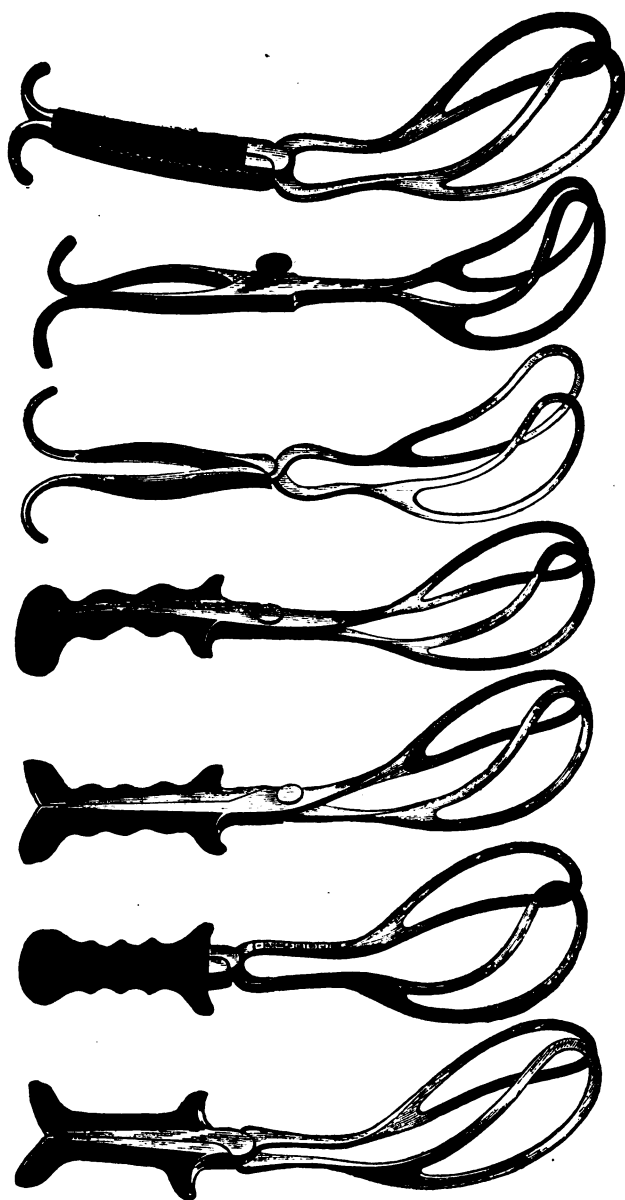
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THE OBSTETRIC FORCEPS

SHELDON LEAVITT, M.D.



COMMON PATTERNS OF LONG FORCEPS.

THE USE OF THE
OBSTETRIC FORCEPS

BY

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PREFACE.

CONTRIBUTIONS by the author have been made to the medical press, at sundry times on different phases of the theme which forms the subject of this monograph. Some of these have elicited from physicians in various parts of the country such assurances of interest and approval as to have prompted him to collate and elaborate them into the volume here presented.

The original papers have been carefully revised; ambiguous sections have been made clear, and much new matter has been added, all with a purpose to give the *accoucheur* a perspicuous view of the design, the action, and the approved modes of employing, the instrument which, when wisely directed and skillfully handled, proves to be the great conservator of both maternal and fetal interests.

To secure this end recourse has been had to profuse illustration, under the conviction that objective teaching is ever most impressive. With few exceptions the illustrations are new and original, the sketches being of the author's own design and execution. With respect to these, the hope is indulged that, though they may abound in defects, from an artistic point of view, they will better serve a didactic purpose than the stock productions with which most of the standard works on midwifery are replete.

SHELDON LEAVITT, M.D.

CHICAGO, *March, 1897.*

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THE OBSTETRIC FORCEPS.

INTRODUCTION.

HALF a mile from Bethlehem, near the Jerusalem road, is a tomb which is supposed to mark the spot where perished the wife of that progenitor of the Jewish race who was honored with the title of a "Prince of God," and whose descendants have ever been designated as Israelites. It commemorates also the sad obstetric deficiencies of that age of the world, and renders more conspicuous the contrast between the life-saving resources of days so distant and our own times.

Rachel was overtaken by the pains of parturition as she journeyed "and it came to pass when she was in hard labor, that the midwife said unto her: Fear not; thou shalt have this son also. And it came to pass, as her soul was departing (for she died), that she called his name Ben-oni; but his father called him Benjamin." It was Rachel's second labor. The record of her first delivery gives no intimation of unusual difficulty; but this was evidently a marked example of dystocia, which went on to utter exhaustion, an earlier termination of which by the means now at command, would probably have saved

from death the wife of this grand old patriarch.

During the centuries which ante-dated the new era in obstetric practice, ushered in by the introduction of the forceps, the midwives who monopolized work of this character had doubtless made desperate, but fruitless, efforts during the agonies of parturition, from which they endeavored to extricate their confiding patients, to make manual seizure of the arrested fetal head with a view to forcible delivery. Such delivery, soon being recognized as impossible, recourse was probably had, with better success, to a reinforcement of the *vis-a-tergo* by means of abdominal pressure.

It was only after Peter Chamberlen, in 1647, published his little pamphlet, in which he alludes to a discovery made by his father, Paul Chamberlen, as the result of which he was able to save many lives, that midwifery practice began to assume becoming dignity as a branch of medical and surgical science. But nearly another century passed before the details of the discovery became generally known and obstetric practice among the better classes began in earnest to assume its proper place.

The history of this invaluable instrument, the popularity of which to-day is at its very zenith, like all other valuable improvements, has reached the enviable position in which it

is now found in the face of much opposition and bitter denunciation. At certain epochs the turns have been so loudly rung to cry of "meddlesome midwifery," that many conscientious practitioners have been deterred from doing for their distressed patients that for which human pity has tearfully petitioned; and even now there are some medical men, to whom the instruction of other years and of prejudiced preceptors has clung with unyielding tenacity, who declare their aversion to the forceps, in whose train they claim to have found gaping wounds and chronic ailments.

That harm has frequently resulted from use of the forceps cannot be denied; but that it is justly chargeable, in the vast majority of instances, to lack of skill in the operator, rather than to the instrument itself, I stoutly maintain. An obstetric delivery is accounted an operation which even the novice may undertake with impunity, and the forceps, an instrument, the skillful manipulation of which one ought to acquire by but little study and practice. There are medical practitioners bearing the marks of proficiency, who suppose the sum-total of forceps delivery to consist of acquiring and maintaining a hold of the head and making adequate traction. They have thus terminated many cases, and, while they do not deny that occasionally a patient has been buried, and that many are suffering from

chronic lesions, they find comfort in the flattering reflection that the forceps is not without its defects, and that human efforts at best are but finite.

The truth is that an operation of this nature is unqualifiedly surgical in character, and, when unskilfully performed, may result in much permanent injury. Notwithstanding this fact, it is commonly undertaken by men and women conspicuously deficient in both native talent and acquired skill for surgical work even of a minor nature. My own opinion is that in no department of surgery is a close and protracted study of principles and *technique* of greater importance than in obstetric instrumentation.

THE OBSTETRIC FORCEPS.

CHAPTER I.

PREREQUISITES TO SUCCESS.

HE who would not blaze his way through obstetric practice so as to be readily traced by the marks of his instrument found along the way, must establish his methods upon anatomical knowledge and sound mechanical principles. A thorough acquaintance with pelvic anatomy is indispensable, for how shall one expect safely and intelligently to rescue an incarcerated head from an environment with which he is not familiar, no matter how beautifully and strongly made, or how aseptic his instrument may be? The various planes of the pelvis, both perpendicular and transverse; the pelvic diameters; the curve of the pelvic axis; the form and situation of the uterus; together with the angle of intersection of its long axis with the plane of the pelvic brim; the relations of the rectum and bladder to the parturient canal; and other anatomical knowledge is of the greatest importance. Then, too, it is essential that the *accoucheur* be familiar with the anatomy of the fetus, and especially with that of the head; and that he have an acquaintance also with the average

and relative cranial diameters, as without a knowledge of these an intelligent delivery with the forceps is impossible. When thus furnished, and then only, is he prepared to apply the mechanical principles involved in a

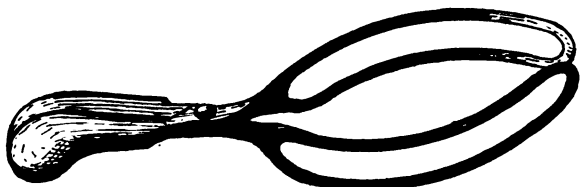


FIG. 1.—SHORT FORCEPS.

difficult instrumental extraction of a retarded or an incarcerated fetal head.

But he is an unreliable mechanic whose knowledge does not embrace, also, an intimate acquaintance with the implements with which he hopes to accomplish his pur.

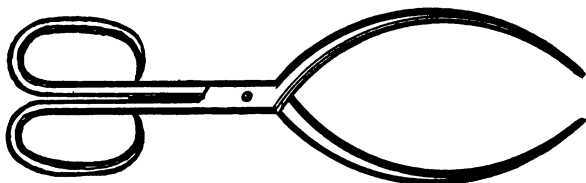


FIG. 2.—THE ORIGINAL CHAMBERLEN'S FORCEPS.

pose; and just as truly is he a poor obstetrician who does not know the design of every feature of the forceps which he handles, and its relative adaptability to the work for which it is intended.

Obstetric Forceps are divided into two general varieties, viz.: the long and the short.

The latter is intended for use more especially in the pelvic cavity and at the outlet. The original instrument of Chamberlen was short, but larger and heavier than most of the short forceps of the present day. The short forceps, as now found in the shops, is very light, and not adapted to the requirements of a true

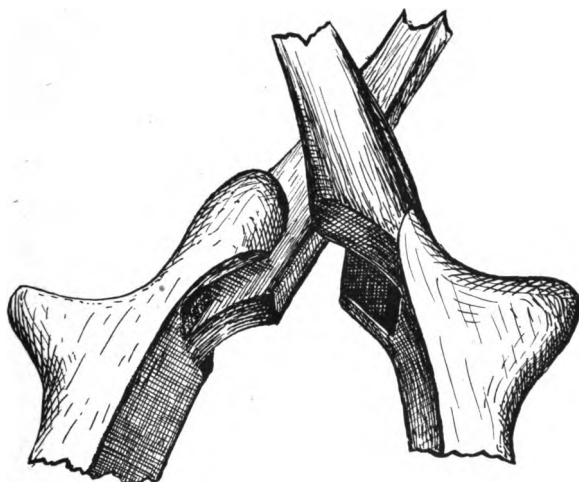


FIG. 3.—THE ENGLISH LOCK.

forceps case; but it acts as an efficient aid to parturition when the second stage becomes too slow as the head sinks into the pelvis or pushes over the pelvic floor. This is the only use to which I think of putting it. It has been recommended for the ease with which application is effected, the claim being that it can be placed upon the fetal head, by deft hands, without attracting the patient's atten-

tion. Even were this true, the recommendation would find little weight with those who claim to do aseptic obstetric work. The total length of the short forceps represented in Figure 1 is $24\frac{1}{2}$ centimetres, ($9\frac{5}{8}$ in.), $13\frac{1}{2}$ centimetres ($5\frac{5}{8}$ in.), being the length of the blade

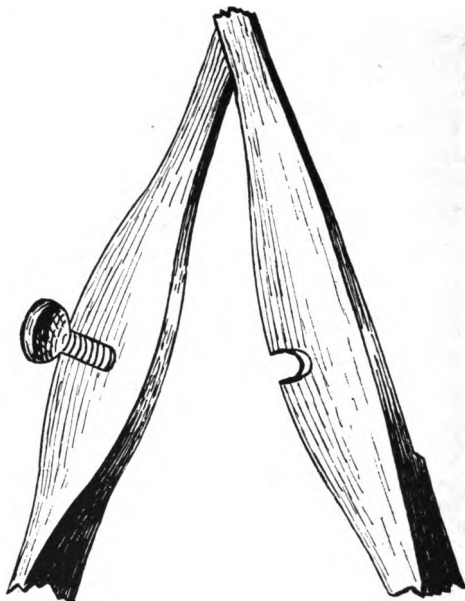


FIG. 4.—THE FRENCH LOCK.

proper, and $2\frac{1}{2}$ centimetres (1 in.) that of the shank.

The long forceps is in more common use, and is best suited to a delivery which is likely to require much traction effort. There are many patterns of the instrument, and, while they all have the same general features, there

is no doubt that some possess advantages for ordinary use well worth special consideration. The features to be sought are: (1) handles of moderate length and so curved as to give axis-traction benefits; (2) blades as light as the necessary strength will justify; (3) a cephalic

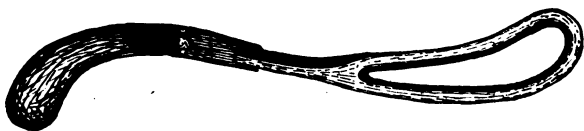


FIG. 5 —LEAVITT'S FORCEPS.

curve sufficiently pronounced to insure firm hold upon the head even when the blades are widely separated, as in application over the long cranial diameters; (4) a pelvic curve acute enough to enable the points of the blades easily to clear the pelvic brim without

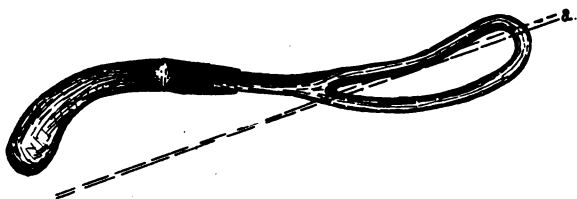


FIG. 6.—SHOWING AXIS OF SAFE ROTATION WITH THE FORCEPS.

excessive depression of the handles, and (5) a lock, simple in form and easily worked, yet affording due security.

The total length of the long forceps shown in Figures 5 and 6, when measurement is made along the line indicated in Figure 6, is

35 centimetres ($13\frac{3}{4}$ in.). Of this total measurement the blade takes up 15 centimetres ($5\frac{7}{8}$ in.), the shank 8 ($3\frac{1}{8}$ in.); and the handle 12 ($4\frac{1}{4}$ in.). The curve of the handle gives a firm and easy hold besides affording the axis-traction benefits about to be described. Moreover, the length of the instrument is diminished about an inch and a quarter by the curve, thereby greatly facilitating portability.

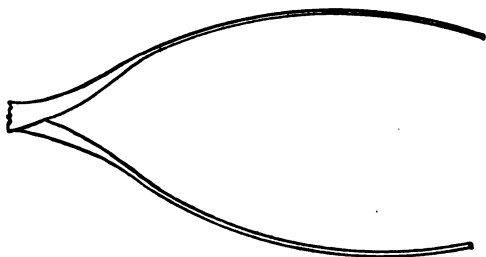


FIG. 7.—SHOWING INSUFFICIENT CEPHALIC CURVE:
BLADES MODERATELY OPEN.

The Salient Features of the Forceps.—

The blades of the instrument are constructed with fenestræ of a form corresponding to that of the blade itself, the intention of which is to diminish the weight, and at the same time to augment the retentiveness of the hold upon the fetal head. The blade requires to be strongly made, hence the best quality of steel should be used in its construction.

In order that compression shall be equably applied, and that the instrument shall conform itself better to the shape of the fetal head, the blade is provided with what is

termed the "cephalic curve." I believe, with Dr. Landis, that, "with a proper head-curve the tips of the blades will approximate to such an extent when the instrument is applied that traction upon the blades brings their distal end upon the further end of the head, so as not only securely to hold it, but also to push it onwards. When the forceps are said to slip during their use one of two things is certain: either the head-curve of the instrument is insufficient, or the blades

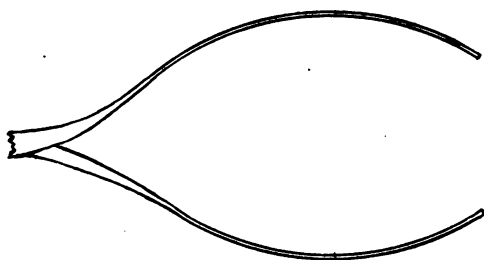


FIG. 8.—SUFFICIENT CEPHALIC CURVE.

have not been properly applied." He should have added, perhaps, "or traction is not made in the right direction." When the instrument is closed, the blades of such forceps will be about 1.3 centimetres ($\frac{1}{2}$ in.) apart at the tips, and 7.5 centimetres (about $2\frac{1}{8}$ in.) at point of greatest curve.

The "pelvic curve" is also a feature of the utmost importance, since by virtue of this curve the forceps is made to conform to the corresponding curve of the parturient canal,

and, with handles of proper shape, extraction is more easily effected. The pelvic curve begins near the distal end of the blade and is continued for a distance upon the shank. In long forceps this curve must be well marked, as without it the head cannot be securely seized.

Obstetric forceps are usually provided with handles of sufficient size and length to insure to the operator a firm hold. Wood and vulcanite were formerly used in their construction, but latterly, in order to render them aseptic, they are made wholly of metal.

CHAPTER II.

SOME PRACTICAL CONSIDERATIONS.

Axis Traction.—Ever since the introduction of the long forceps into obstetric practice there has been sensible need of an instrument which will enable the operator to make traction in the axis of the various pelvic planes. If the pelvis were cylindrical in shape, there would be no difficulty in providing such an instrument. But, on the contrary, the pelvis is a bony case, shallow anteriorly, deep posteriorly, with varying diameters and an irregular axis. The curve of the parturient canal, as we all know, is extensive. In the erect posture the plane of the pelvic brim lies at an angle of sixty (60) degrees with the horizon, and the plane of the outlet at an angle of but eleven (11) degrees. This has reference to the bony pelvis. During labor, as the head descends, it comes into contact with the pelvic floor, which it greatly distends, until the plane upon which it finally emerges, represented by a line drawn from the crown of the pubic arch to the posterior vulvar commissure, is almost vertical.

The long forceps, as ordinarily constructed, is provided, as we have seen, with a curve conforming in some measure to the curve of

the pelvic axis; and, therefore, when the instrument is applied to the head lying at or above the superior strait, traction is considerably diverted from its proper direction, and falls very largely upon the posterior surface of the symphysis pubis.

It is true that the difficulty presented in most instances of forceps application at the

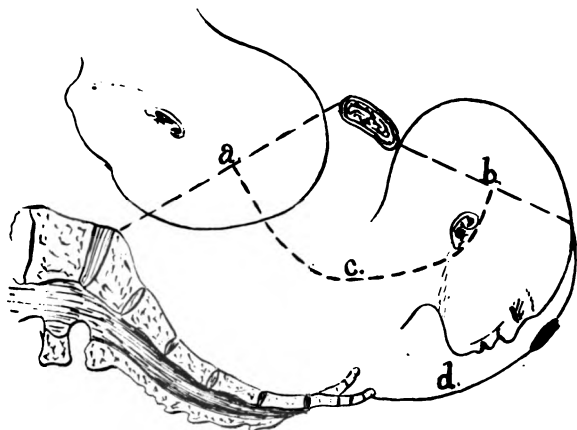


FIG. 9.—HEAD FOLLOWING CURVE OF PELVIC AXIS:
a, head passing pelvic brim; *c*, pelvic axis; *b*, head emerging from vulva; *d*, distended and elongated pelvic floor.

pelvic brim is overcome with tolerable facility by the long forceps as ordinarily constructed; but sometimes the brim is relatively so small, owing to equable contraction or unequal deformity, that only by dint of powerful traction and the most skillful manipulation can delivery be brought to a satisfactory close. In other instances the disproportion between the

head and the pelvis is so great that the ordinary forceps cannot be made to effect delivery. It is in such cases that the axis-traction instrument is peculiarly serviceable. By means of it the head can be made to enter the pelvic brim in a direct course, and to follow the pelvic axis throughout.

In order to overcome the difficulties mentioned, and to diminish thereby to mother and fetus the danger associated with a delivery

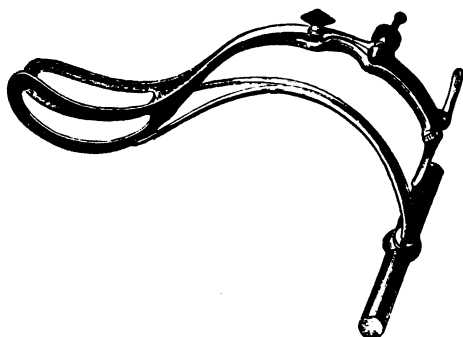


FIG. 10.—TARNIER'S FORCEPS.

which necessitates powerful traction and the infliction of considerable injury to the soft pelvic tissues, various devices have been suggested. For example the operator has been instructed to direct the line of traction into the pelvic axis by backward pressure upon the forceps during the traction effort. Some degree of aid may be obtained in this way, but it cannot be great, while those familiar with the clinical aspects of the case will recognize

the danger of thereby displacing the forceps. Some years ago Tarnier devised an expedient in the shape of a special traction-rod attached to the proximal extremity of the blades, bent in such a way as to over-ride the perineum and yet locate the handle well posteriorly, so as to insure the desired line of traction. This instrument, however, is expensive, heavy, clumsy, and is said to be difficult of application, save by experts.

Various other instruments have been devised to accomplish the same end, none of which, so far as I know, has given much satisfaction. Fourteen years ago the author of this treatise brought to professional attention the instrument figured in the accompanying cuts, and more particularly in Figure 5, which, in the hands of many hundreds, has answered every purpose. In using it, the weight of traction effort should be placed at the extremity of the handles, as thus only is the proper traction-line to be followed.

I believe that this instrument serves the purpose of delivery under all conditions, and is the only forceps required in ordinary practice.

Designation of the Blades. — The two branches of the instrument are commonly designated by modern obstetricians as the "right" and the "left." Other appellations, such as "male" and "female," and "upper" and "lower," are derived from the charac-

ter of the lock and the position of the parturient woman.

In order to make the distinction between the blades as perspicuous as possible, we may

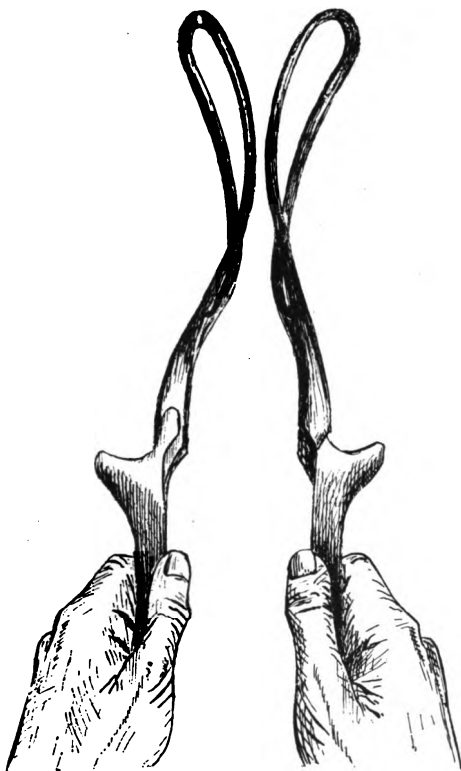


FIG. 11.—LEFT BLADE.

FIG. 12.—RIGHT BLADE.

say that, when the forceps is held by the handles, right side upwards, that is to say with the concavity of the pelvic curve above, the handle which is to the left is that of the

left blade and the handle which is to the right is that of the right blade. It will be seen from this that the distinction is a just one, the more so as the left blade would naturally be handled by the left hand and the right blade by the right hand. But these distinctions are rendered still more emphatic by the fact that the left blade, when introduced, ordinarily goes more or less into the left side of the pelvis, and the right blade into the right side.

Accordingly the terms "right" and "left" are the only ones which will be used to designate the blades in what I have to say on this subject.

Action of the Forceps. — The forceps is primarily and essentially a tractor, but, in a modified sense, it is also a lever, a compressor, and a rotator. The instrument should be so constructed that traction can always be made in the direction of its long axis, without diversion, as I have before shown, since otherwise a firm hold of the head is jeopardized. The degree of traction is always under perfect control and is determined by the necessities of the case: the operator never forgetting that his recurrent efforts should be intermittent and brief. Safe and efficient traction can be applied only when one has a secure hold of the head, and is most effectual when made in the axis of the parturient canal.

Divarication of the pelvic bones sometimes

results from forcible delivery, and would often occur to a harmful degree but for the firmness with which articulations are held.

As traction cannot be made without maintenance of hold upon the fetal head, a certain amount of compression, varying in degree with the amount of traction force applied, is essential. That compression serves a very useful purpose beyond this, I seriously question.

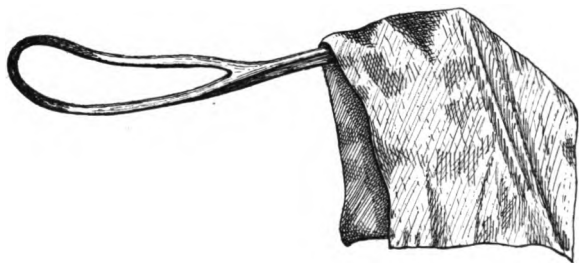


FIG. 13.—TOWEL THROWN OVER THE HANDLES TO MAKE TRACTION MORE COMFORTABLE FOR THE HANDS.

Continuous compression is destructive to fetal life. The practice followed by some physicians of wrapping a towel tightly about the handles is therefore to be condemned. In a difficult and protracted delivery the operator's hold of the handles is rendered less tiresome and painful by covering them with a towel in the manner indicated in Figure 13: but tight wrapping is always to be avoided.

As a lever, the forceps may be used for enforcing firm flexion of the head, and, in

difficult cases, for canting the head and thereby augmenting the effect of traction. A certain amount of this oscillatory movement is permissible when made in a lateral direction, during traction; but the operator should beware of what has been termed the "pump-handle" movement, that is, movement during traction in an antero-posterior direction.

Rotary action of the instrument is made chiefly when the head lies fully in the pelvic cavity, having wholly cleared the superior strait. The demand for rotation of the fetal head during forceps delivery is found in the altered mechanical relations proceeding from a failure of *vis-a-tergo* and a substitution of *vis-a-fronte*. Many obstetricians are opposed to extensive rotation of the head in the pelvic cavity, such as is necessary in occipito-posterior positions, through fear of injury to the maternal soft tissues. I believe that it can be safely done, if undertaken at the right time and carried out with due regard to the double curve of the instrument (see Fig. 6) and the physiological indications as to the proper time for doing it. It should never be attempted before the head escapes the trammels of the brim.

CHAPTER III.

CLEANLINESS.

MIDWIFERY ought to be a specialty, but, since it is not, he who practices it should be made familiar with the cleanest and safest way of doing what is required. Obstetrical practice has improved *pari passu* with surgery, of which it is really a branch; and in order to do the best work one must have some practical acquaintance with surgical *technique*, and be deeply impressed with the value of aseptic procedure. Not many years ago it was held as a wise percept of surgical practice that obstetrics and major surgery should not be followed by the same individual, for fear of infection: a truly wise percept so long as the former was done in a slovenly way. But the modern surgeon, with his knowledge of anti-septic and aseptic precautions, need have no fear of mixing them. Indeed, we have notable examples of eminent success in a combined practice of these two. The rural practitioner is compelled, by force of circumstances, to bend his efforts to good all-round work, whether he will or not. He is expected to be oculist, rhinologist, obstetrician and general practitioner, all in one. Still, it remains true that, in order to attain emi-

nence in these days one must direct all his energies into a single channel of thought and effort, contenting himself with but a superficial knowledge of other branches of the preservative and healing science and art.

There is no doubt that the one thing which characterizes the surgery of to-day, the one cardinal element of its astonishing immunity from the suppuration, the toxemia and death which formerly attended it, is found in the scrupulous attention, now so uniformly given, to the details of asepsis and antisepsis.

Surgeons are not so much better supplied with anatomical knowledge, manual dexterity and instrumental equipment than they were a decade and a half ago; but, whereas they were then just negatively untidy, and only a slight remove from inattentive, they are now punctiliously nice in the matter of cleanliness and extravagantly vigilant over all the details of their work. So marked has been the change, that, in some circles, it is feared the pendulum has swung to a wearying extreme. But the clinical results obtained by those who are the most scrupulously nice in their exactions, encourage them to greater thoroughness, since every added precaution manifests its value in a diminished morbidity and a dwindling mortality.

This has been the course in general and special surgery; but slower progress has characterized the advance of the aseptic idea

in obstetric practice. The trouble is, as I have before intimated, that midwifery has not been generally accorded a place in surgery, and hence surgical notions have been slow to find way in its practice. The older practitioners having met few cases where fatalities were recognized by them as justly attributable to a lack of precaution in the matter of cleanliness, have felt fairly content with results, and have been reluctant to adopt new methods; while the younger practitioners, finding the minds of their patients unprepared to accept new notions of management which would augment expense and increase domestic annoyance, have suffered better methods to be neglected, rather than make themselves conspicuous, and suffer financial loss, by making new and unusual demands.

Gradually, however, the innovations which have so improved the results of surgical practice have been introduced, until, especially in urban practice, the laity have come to look for more exact and scrupulous care in prophylaxis.

Though this monograph is intended to deal chiefly with the proper *technique* of instrumentation, I cannot safely enter upon a discussion of the practical features of forceps application without first briefly considering the subject of asepsis and antisepsis in its adaptation to instrumental delivery in ordinary private practice.

Primary Preparation of the Patient.—

Even in this day of comparative cleanliness, I venture to say that not one-half of all obstetric patients are given suitable preparation for delivery by cleansing and dressing. A woman is overtaken by the pains of labor, sends for her nurse, who often has no true conception of cleanliness, and shortly for her physician, who makes no inquiry concerning the preparations which the nurse, or other person, has made. The untrained nurse, and sometimes even the training-school graduate, gives much attention to arranging the bed, and supplying little conveniences, but absolutely none to the matter of aseptic preparation of the patient herself. Now this is all wrong. We should insist that a full bath be given early in labor; that the lower bowel be emptied by means of an enema; and that the abdomen, the external genitals, the nates, and the thighs, as well as the hands and face, be well washed with soap and water, and then bathed with an antiseptic solution. Drying should be with sterilized towels. These matters having received attention, an aseptic napkin is to be applied, and clean underclothing put on. All this can be done by any careful woman, either in city or country, and, if well done, need not be repeated in its entirety should the forceps come into requisition. I have purposely omitted mention of vaginal douching, since I believe the vaginal

surfaces to be practically sterile, provided they have not been touched by unclean fingers.

Primary Preparation of the Bed.—I are well convinced that women sometimes suffer infection from the very bed upon which they lie. Filthy mattresses and soiled bed-clothing are to be discarded. To be sure, a new mattress cannot well be required; but the patient should be expected to avail herself of the best the house affords. The mattress ought always to be covered by a sheet of rubber, or oil-cloth, which has received due antiseptic attention. No old comforts, quilts or blankets should be allowed above the rubber sheets; but, for convenience of subsequent cleaning, uncontaminated sheets may be folded and laid under the woman's hips.

Primary Preparations of the Accoucheur.—I need not devote much space to a consideration of these. Thorough and repeated washings are of most importance. I have not recommended that the lying-in chamber be prepared with impractical scrupulousness, nor do I now say that the accoucheur should change his clothing, undergo repeated ablutions of the entire body and sprinkle himself with disinfectants before approaching his patient. Such measures are not essential to good practice. At the same time I do not hesitate to make most emphatic the necessity for careful attention to all important details of aseptic preparation. The daily habits of the

exemplary physician are cleanly, and for such there is little need of a general cleaning on each special occasion.

The hands of the obstetrician are the most potent source of infection, and too much care cannot be devoted to them. Neither the first, nor any subsequent, examination of the patient is to be made without thorough washing. Special attention should be given the nails, in the subungual spaces of which infection is so liable to lurk. It may be unnecessary to add that the coat should be removed, the sleeves rolled up and the cleansing process extended as high as the elbows.

The hands, after being prepared, are not to be allowed to come in contact with anything not equally clean. I am persuaded that it is just here that the effect of aseptic effort is so often spoiled. I have seen one of the most eminent surgeons of the world scratch his head thoughtlessly (and yet thoughtfully), during an operation, and then immediately thrust his hand back into the peritoneal cavity.

Two more suggestions and I shall be through with what need here be said regarding primary asepsis: Nothing short of a thoroughly clean towel is to be used to dry the hands and instruments, and no suspicious lubricant is to smear the examining-fingers.

Special Preparations for Forceps Delivery.—When all this is done as a routine

practice, much less special preparation for instrumental delivery is required. The latter consists mainly of sterilization of the instrument by boiling, and recleansing of the patient and the operator himself. Care over the instrument after sterilization, prior to use, is liable to be neglected, and therefore should receive attention, the more so inasmuch as the work of sterilization is usually intrusted to the nurse or some other person.

I usually anesthetize the patient and put her in position, with leg-holder applied, before giving the vulva, hypogastrium and thighs their final cleansing.

CHAPTER IV.

TECHNICS OF FORCEPS DELIVERY.

Modes of Application.—I am not disposed to be dogmatic in advocacy of particular modes of applying the instrument, and

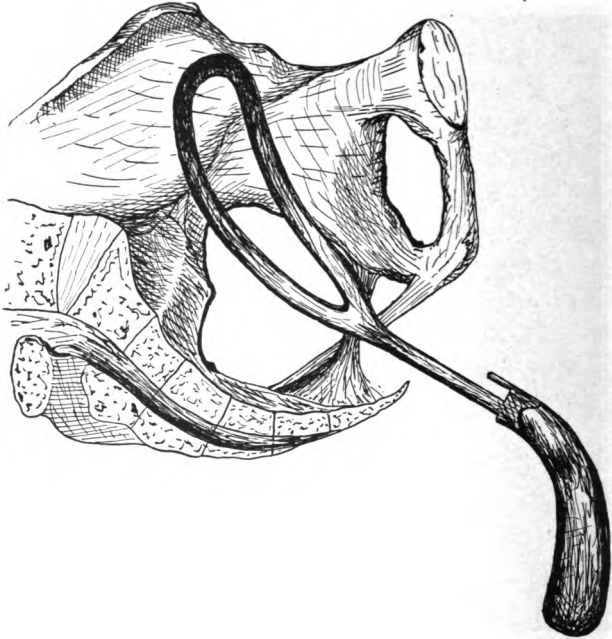


FIG. 14.

Position and situation of the left blade when applied by the "pelvic mode" to the head at the superior strait.

yet I deem a thorough understanding of this part of the subject absolutely essential to a

safe and intelligent delivery. It is my habit to teach two distinct modes: one known as the "pelvic" and the other as the "cephalic." In the use of the former, the blades, when fully introduced, rest in the sides of the pelvis, and embrace the head over the poles of diameters varying with the position of the head. This mode of application is unwisely

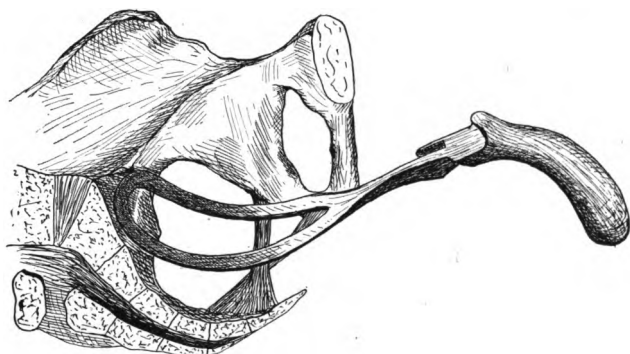


FIG. 15.

Position and situation of left blade when applied by the "cephalic mode" to the head lying in the pelvic cavity in the first position.

adopted by some *accoucheurs* under all circumstances, though it is well suited only to certain cases. In the use of the cephalic mode, the blades, when fully introduced, may lie antero-posteriorly, obliquely or transversely, their position being determined by the position of the fetal head.

In brief, then, I may say that, in following the pelvic mode, we disregard the position of the fetal head, but are controlled altogether

by pelvic conformation; while in following the cephalic mode we pay far less regard to pelvic anatomy, but our application is controlled almost wholly by the position of the fetal head.

As a general guide to choice between these two forms of application, one ought to re-

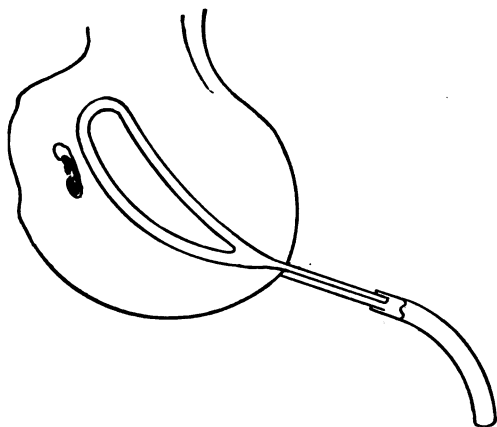


FIG. 16.

Showing forceps applied to the head by the "pelvic mode" in the R. O. A. position of the vertex, the forceps covering poles of an oblique diameter.

member that the pelvic mode should be employed when the head lies at the pelvic brim or above it, and the cephalic, when it lies within the pelvic cavity or at the outlet.

The pelvic mode, while not suited to a low application, can be used with the head in any situation; while, on the contrary, the cephalic mode is adapted only to a low application, and

can rarely be successfully employed when the head lies high.

In the pelvic method the blades most frequently cover the poles of an oblique cephalic diameter, while in the cephalic, the head is always seized over the poles of a transverse diameter.

That the cephalic form of application is

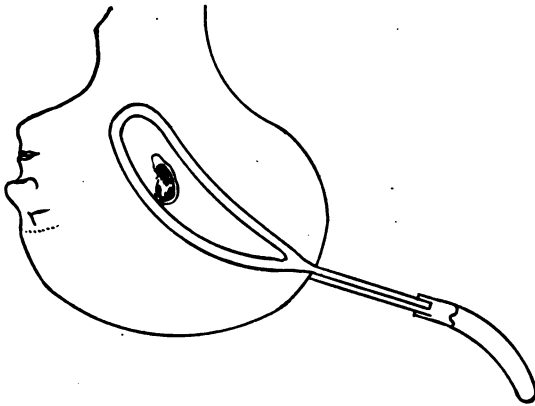


FIG. 17.

Forceps by the "cephalic mode" covering poles of bi-parietal diameter.

safer to the fetus, is beyond controversy, and the only reason for not adopting it under all circumstances is our absolute inability to do so when the head is situated high in the pelvis, since, in order to reach the sides of the head, it becomes necessary to turn the pelvic curve of the instrument counter to the curve of the parturient canal, a thing which cannot be done at such a height without violence to

the soft pelvic structures. Consequently it is nearly always an operation of necessity, rather than election, the chief objection to it lying in the fact that compression of the foetal head with the forceps, one blade of which rests at the base of the brain and the other over a lateral aspect of the sinciput, is far more dangerous to fetal life than lateral compression.

In taking this position with respect to the pelvic mode of application at the brim, I am well aware that the curve of some instruments is made with a view to seizure of the head, even there, over its lateral surfaces, and that this form of application is recommended by some accoucheurs of repute; but I regard such efforts, whether successful or not, as fraught with increased danger to the maternal tissues, and as yielding inadequate compensation for the augmented risks involved.

The mechanism of forceps application is substantially the same in all cases; but since the details must differ in some respects in order to conform to the deviating positions and presentations, I will undertake to describe application and delivery with especial reference to their clinical phases under the varying conditions.

Application to the Vertex at the Brim and Above.—When the head presents by the vertex at the superior strait it is usually mobile, and susceptible to some degree of change through

manipulation. Even introduction of the blades not infrequently causes slight rotation, so that the head may be inadvertently changed from a first into a fourth, or from a second into a third, position, or *vice versa*. This free mobility of the head renders application somewhat difficult, but the embarrassment is often greatly increased by incomplete dilatation of the os uteri, which commonly exists when so high an application is required.

The pelvic mode is to be employed, which, as will now be understood, means deposition of the blades in the sides of the pelvis. The left blade always precedes the right, not because of any peculiar anatomical conformation of the pelvis, but because the lock is so constructed as to make that order preferable. The left blade being held in the left hand, is passed along the palmar surface of the fingers of the right hand which rest against the fetal head within the circle of the os, until it reaches the head. Now, although the blade is at last to rest in the side of the pelvis, it must take a circuitous route to reach that situation. Its point, accordingly, will at first be directed backward and slightly to the left, until it reaches the fetal head; but, owing to the peculiar form of the instrument, with its double curve, from this point onward it should be carried into place by a broad sweep of the handle across the patient's right natis. At the close of this movement the handle will

point downward and backward, the blade and shank being entirely within the vulva. The movement of introduction is always to be accomplished without force, and, when properly performed, requires none. The right blade is now taken in the right hand, while the fingers of the left hand serve as a director. The movement of introduction corresponds to that required for the first blade, the direction only being changed. The handle of the right blade, at the close of the broad introductory sweep, approaches its mate and glides rapidly into place. The forceps is then in position.

Application above the brim is liable to be embarrassed by three conditions, namely: (1) mobility of the head, (2) large size of the head and (3) incomplete dilatation of the os-uteri. The first can be overcome only by painstaking efforts to avoid rotation of the head during introduction of the blades. More especial difficulty of this kind arises during application of the second blade, and I have best overcome it by making the spiral sweep of the instrument unusually broad. The second hindrance is sometimes exceedingly hard to overcome, and, if the head chance to be greatly out of proportion to the pelvic brim, we may utterly fail to acquire a firm hold upon it, though such a result is exceedingly rare. This obstacle is also best surmounted by broadening the spiral sweep of introduction, while the head is pushed somewhat backwards by

the hand of an assistant applied to the hypogastrium. The conditions under which these high applications are made sometimes render the third obstacle highly embarrassing. For example, in puerperal eclampsia we may feel the urgency of immediate delivery, but we

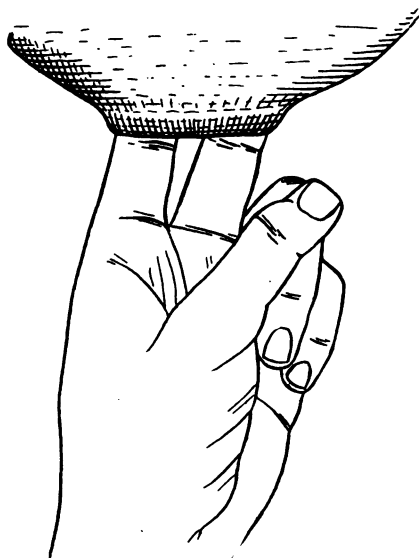


FIG. 18.—MANUAL DILATATION OF THE OS-UTERI.

often find that the os-uteri can be expanded but a little way, and offers iron resistance to all further efforts. It may be possible to adjust the first blade through an os-uteri but slightly dilated ; but the space occupied by it is liable so greatly to diminish the cervical opening as to preclude the possibility of pass-

ing the second blade. Moreover, the os is with difficulty held by the directing finger in such a manner as to afford the best facility for introduction of the second blade without the fingers themselves diminishing the required space. To overcome this I have, in a few instances, seized the os-uteri with bullet forceps and given it into the hands of an assistant, who, by means of it, has held the part in a position better calculated to facilitate introduction.

When the head lies at the superior strait, wholly or partially engaged, the difficulties are not so great. We employ the same mode of application and introduce the blades in a similar manner.

It will be observed that thus far I have made no distinction between the various cranial positions in my description of the mechanism of application, for, in truth, none should be made, since the blades are applied in substantially the same manner in every case. To this a single exception should be mentioned, and that arises in occipito-posterior positions. Inasmuch as the rotation required in these cases is so extensive, in order to bring the occiput to the pubic arch at the close of the second stage, in some instances I have deviated, as follows, from the routine application described: By introducing the aseptic half-hand into the vagina, it is occasionally possible, by bi-manual manipulation, to rotate the occiput

from a backward, to a lateral situation, which can be maintained by firm pressure upon the hypogastrium until the forceps has been properly placed. With the long diameter of the head lying in the transverse of the pelvis, I have, in a few instances, succeeded in so varying the application as to throw one blade of the forceps slightly behind the occiput, and its fellow partly over a brow, thus insuring better control of the head and more convenient enforcement of rotation within the pelvic cavity. Indeed, I have found it possible, after thus seizing the head, to rotate it moderately and carefully above the brim so as to convert it into an occipito-anterior position. I do not favor introduction of the whole hand within the uterus for the purpose of rotation, and adopt the foregoing expedient only in exceptional instances.

Let us now pursue the mechanism of delivery in various positions of the vertex, when a high application of the forceps becomes necessary.

Mechanism of Occipito-Anterior Positions.—In the first position the head is drawn directly downward into the pelvic cavity until it has fully cleared the brim, when rotation is effected by carrying the occiput from its left anterior location to the pubic arch. Firm compression should always be made when forcible traction is to be applied; but it should always be avoided when, to secure descent, an

outlay of much force is unnecessary. The design is to teach that compression force should always correspond to the degree of traction force, the main design of it being to prevent slipping of the instrument. The direction of traction, which is at first downwards and backwards, gradually changes during descent of the head, until, at the moment of exit, it approaches a right angle to the long axis of the woman's body.

The mechanism of forceps delivery in the second position differs in no essentials from that which characterizes the first, the direction of movements only being changed.

What has been said regarding delivery from the brim of a head when presenting in the left occipito-anterior position, answers for a description of delivery in the second or right occipito-anterior position, the two differing only in the matter of direction of movements.

Mechanism of Occipito-Posterior Positions.—A safe and satisfactory delivery of the fetal head when it occupies an occipito-posterior position demands a good acquaintance with pelvic anatomy, cranial anatomy, instrumental curves, the phenomena of normal labor, and mechanical principles in general. I am opposed to forcible manual rotation of the head in these cases, through introduction of the whole hand into the uterine cavity, believing it far safer to effect necessary rotation by digital effort or by instru-

mental aid when the head has reached the pelvic cavity. Allusion has already been made to a modified manipulation of these cases, simple in character, and occasionally effectual; but generally it is better to allow an occipito-posterior position to descend as such until the head lies low in the pelvis.

By means of the forceps, we bring the head, in these cases, as in others, directly downwards until it has fully cleared the pelvic brim, at which point begins the movement of rotation. I am well aware that many obstetricians regard enforced rotation of the head with the forceps exceedingly dangerous, and I am ready to admit that it may easily become so in the hands of an unskillful operator.

In connection with rotation there are two points of special importance: (1) That it should not be performed until the hand has fully passed the superior-strait; (2) That the axis of rotation be not the long axis of the entire instrument, but merely of the blade proper. (See figure 6.)

There is great danger to the pelvic structures and to the lower uterine segment associated with efforts to effect rotation at any other stage than that just indicated. This arises in part from the lack of pelvic space, but also from greater difficulty in choosing the proper instrumental axis for the accomplishment of a movement of this character.

When we make the axis of rotation the instrumental axis of the entire forceps, the points of the blades are bound to do much damage to the soft pelvic tissues, even though the opportune moment for rotation be chosen. To accomplish the movement safely, then, something different from a mere twist of the instrument is required, and that difference consists, as I have intimated, in choosing the long axis of the fenestrated blade for the axis of rotation, and giving to the handle of the instrument a crank-like motion. When effected in the manner described, I am persuaded that rotation is not attended by any considerable degree of danger.

In this connection I should add that it is assumed, as a matter of course, that the conditions favorable to facile rotation of the head in normal labor, and especially the condition of firm flexion, are always maintained under wise management, and therefore form a part of the instrumental procedure just described.

But, owing to the pelvic curve of the forceps, it becomes impossible, in these occipito-posterior positions, to proceed far with the rotation without inverting the instrument and seriously endangering the pelvic structures. By the time the head has reached the stage of descent best suited to the performance of rotation, retraction of the uterus has taken place so that this organ is not exposed to special danger. With the

head so low, it is quite possible, without particular risk, to carry the rotation far enough to bring its long diameter into the transverse of the pelvis, and as far as this point we seek at first to proceed. The forceps should then be removed, by reversing the movement of introduction, and reapplied, the second time by the cephalic mode, and in such a manner as to direct the concavity of the pelvic curve of the instrument towards the occiput, when, of course, rotation can be completed, and extraction effected.

The double application of the forceps just described, the first by the pelvic mode and the second by the cephalic, requires some study in order to make the mechanism entirely clear to the operator; but it is certainly of the highest importance in the management of these perplexing cases.

CHAPTER V.

TECHNICS OF FORCEPS DELIVERY.

(Continued.)

Application to the Vertex within the Pelvic Cavity and at the Outlet.—Conformably to what has already been stated, I insist that application to the head lying in the pelvic cavity should be made by the cephalic mode, which usually means application of the blades to the sides of the head. In adjusting the forceps to any position of the vertex, the desirability of the occiput turning to the pubic arch before it passes the vulva is to be kept in mind, and the forceps applied with respect to such movement.

In the two occipito-anterior positions, necessary rotation is but slight, and is spontaneously effected by the natural forces in non-instrumental cases; but in the two occipito-posterior positions, rotation is extensive, and not always easily accomplished. In enforcing rotation by artificial means we find the difficulties awaiting upon occipito-posterior positions correspondingly unreduced.

Mechanism of Occipito-Anterior Positions.—Let us begin consideration of the mechanism of forceps delivery from the pelvic

cavity, with the head occupying the first position of the vertex.

Now let it be kept in mind that, in order to make an intelligent application of the forceps under any circumstances, the position of the head must be clearly recognized, and the pro-

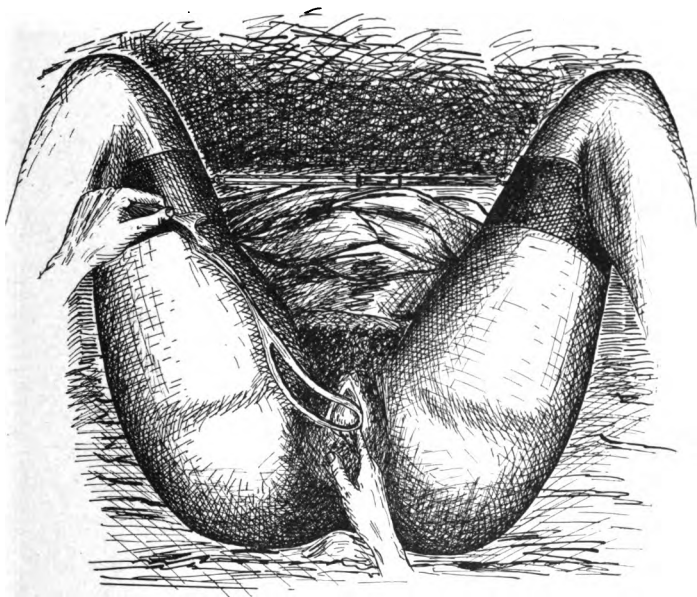


FIG. 19.—INTRODUCTION OF FIRST BLADE, WITH THE HEAD AT THE VULVA.

posed relation between it and the instrument fully pictured in the mind. In the first position, since the long diameter of the head occupies the right oblique diameter of the pelvis, with the occiput turned forward towards the left, it is plain that the forceps, in order

to cover the lateral surfaces of it, will have to be applied in the opposite oblique diameter, *i.e.*, the left blade will be in proximity to the left iliac synchondrosis, and the right blade in the direction of the right ileo-pectineal eminence.

The method of introduction resembles that prescribed for application at the brim: The left blade is introduced with the left hand, the fingers of the right hand serving as a director. The point of the blade, as it passes, takes a backward course, to the left of the sacral hollow, and glides at once to its proper position, the cephalic curve of the instrument alone being regarded. The right blade is held in the right hand, while the fingers of the left serve as a director. The point of the blade is given a backward direction until it has glided a little way along the surface of the head, when the directing fingers give the entire blade a lift, while at the same time a broad sweep is made by the handle over the left natis, and the blade is gently pushed inward until it lies opposite its fellow, so that the two branches easily lock. It will be observed that in this application the left blade goes directly to its place, while the right is required to make an extensive spiral sweep. Rotation is effected by bringing the occiput to the pubic arch, and delivery is then easily made. In the second position, the left blade is required to make an extensive spiral sweep

in order to gain a position on the left side of the head, which is turned forward towards the left. The right blade is passed without difficulty to the opposite side of the head. Rotation is easily effected and the delivery accomplished.

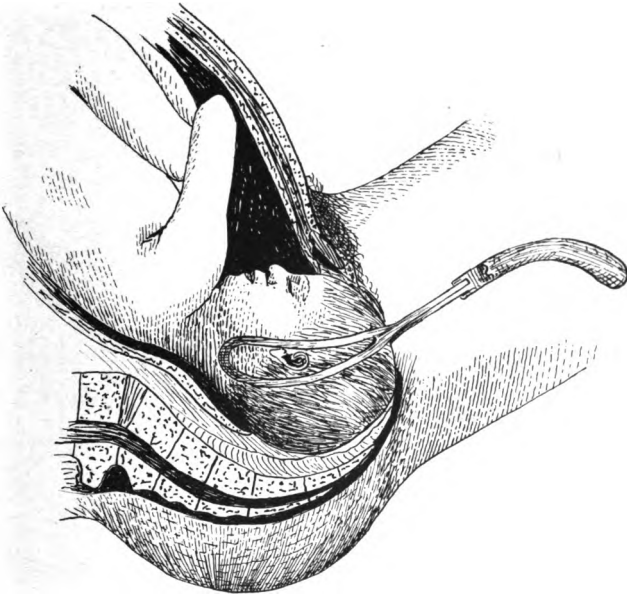


FIG. 20.—OCCIPITO-POSTERIOR TERMINATION OF DELIVERY.

Mechanism of Occipito-Posterior Positions. — The occipito-posterior positions, known as the third and fourth, are not so easily managed. The primary application is no more difficult, but, owing to the extensive rotation required to bring the occiput to the

pubic arch, delivery is relatively slow and complicated. Many obstetricians, regarding forcible rotation of the head within the pelvic cavity as hazardous, prefer to terminate extraction with the occiput upon the perineum. I regard a delivery thus effected as unscientific and awkward, while it is relatively

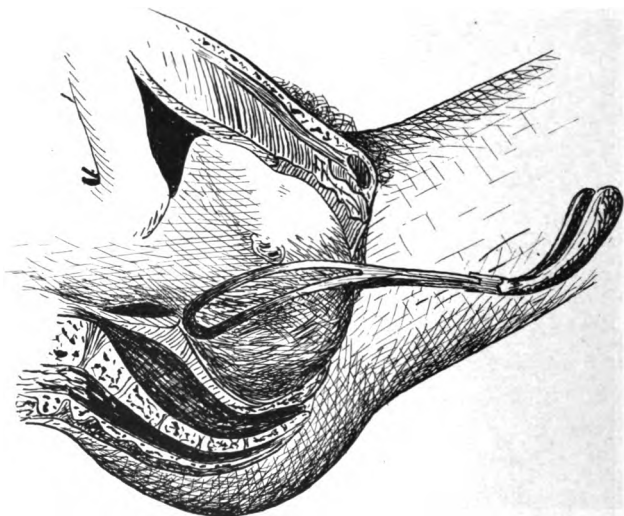


FIG. 21. — IMPROPER APPLICATION: FORCEPS INVERTED.

more dangerous to the woman than one in which rotation is intelligently and carefully made.

In the third position, the occiput is directed backwards and to the right, while the left side of the head lies forwards and to the right, and the right side of the head backwards and to the left. Now, as it will be wrong to

apply the forceps in an inverted position, we are under the necessity of making the first application with the concavity of the pelvic curve directed toward the forehead. With the forceps thus applied, the head is drawn toward the outlet, while at the same time it is rotated until its long diameter is brought into the transverse pelvic diameter. When we have proceeded thus far with the delivery, the

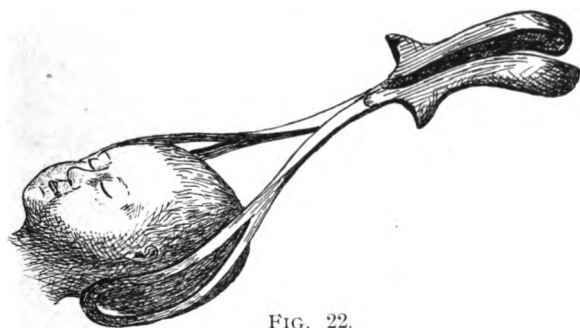


FIG. 22.

FIRST APPLICATION OF THE FORCEPS IN L. O. P.,
(FOURTH) POSITION; HEAD IN PELVIC CAVITY.

occiput is directed toward the right, and the concavity of the instrumental curve looks in the opposite direction. Inasmuch as further rotation cannot be made without dangerous inversion of the instrument, the blades are carefully removed by reversing the movement of introduction, and are immediately reapplied with the curve looking in the opposite direction. To accomplish this, the left blade is required to make an extensive spiral sweep,

the movement being materially aided by the fingers which lie in the vagina. The right blade will go without difficulty to its proper position. Rotation is then to be completed and delivery terminated.

When the vertex lies in the fourth position within the pelvic cavity, the occiput is directed backward and toward the left, and the bi-parietal diameter is in the right oblique of the pelvis. In this case the left blade is re-

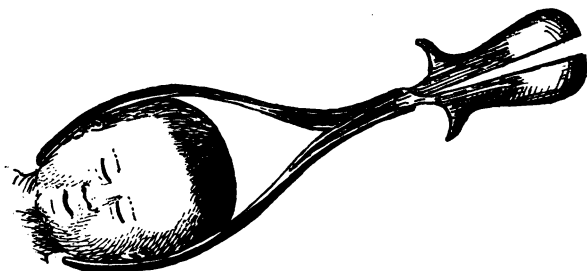


FIG. 23.—HEAD ROTATED FROM L. O. P. POSITION AS FAR AS POSSIBLE WITHOUT INVERSION OF THE PELVIC CURVE.

quired at first to make an extensive spiral sweep to gain its proper place, while the right glides at once to its position. Rotation is carried as far as possible without inverting the forceps, and the latter is then removed. Now, since the occiput lies to the mother's left, reapplication involves carrying the left blade at once to its place, while an extensive spiral sweep is required of the right one. Rotation and delivery are easily completed.

Application to the Face.—Use of the forceps in face presentation, at the brim or above, is always to be avoided, as it is extremely dangerous to fetal life. When the head is mobile, a strenuous effort should always be made to convert a presentation of the face into one of the vertex, and if the effort is made with intelligence, failure will rarely be

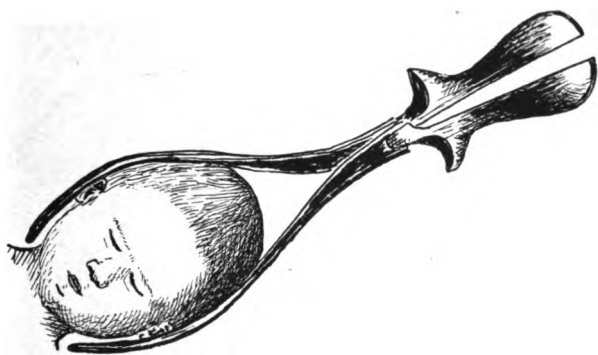


FIG. 24.—FORCEPS AFTER REMOVAL AND RE-APPLICATION IN L. O. P. POSITION; CONCAVITY OF INSTRUMENTAL CURVE TURNED TOWARD OCCIPUT.

experienced. Should the face be lying at the pelvic brim, it can usually be dislodged and changed into a vertex presentation. When a manœuvre of this kind is effected, it is occasionally possible to get the forceps on by the cephalic mode, but it requires extremely deft and careful manipulation. I met with success in a recent case of right mento-posterior position, effected rotation in the cavity

and delivered a living child without lacerating the perineum.

Fetal dangers in face presentation are always tremendous, but they are dreadfully augmented by forceps applied after the pelvic mode. The reason for this is readily found in the location of one blade, in every such case, upon the throat of the child, and the violent extension which the necessary compression enforces. With such cases, exercise

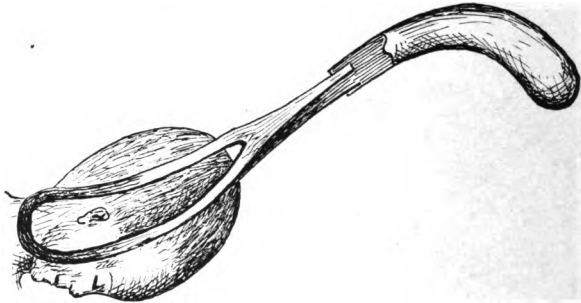


FIG. 25.—ROTATION COMPLETED.

of the greatest patience by the *accoucheur*, and of profound fortitude by the patient, are essential. Proper management involves the giving of more time to the natural efforts, so that adequate descent for a forceps application by the cephalic mode may be acquired. Be it remembered, however, that, if the child be already dead, the foregoing restrictions should be disregarded and the woman's safety alone considered.

It is clear from what has been said that it

will be necessary for us to consider here the cephalic mode of application only for a living child. In the matter of parturient difficulty there exists the same difference between these positions that we find in vertex presentation. Here, however, the first and the second are

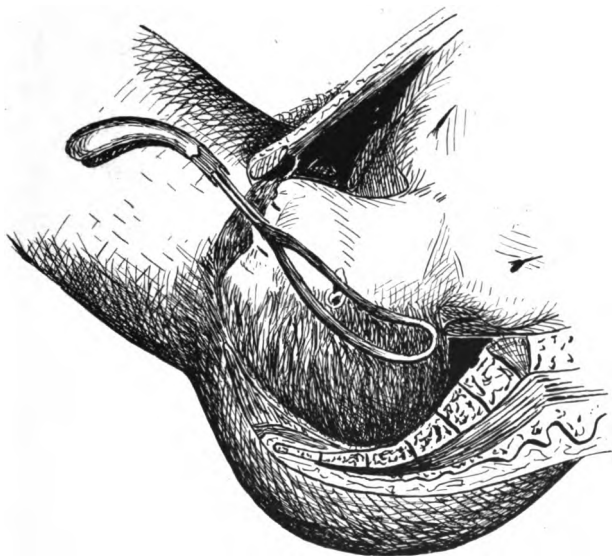


FIG. 26.—DELIVERY IN A MENTO-ANTERIOR POSITION.

the more unfavorable, corresponding in that respect to the third and fourth of the vertex. As in vertex presentation the positions named present difficulties growing out of the backward direction of the occiput, so here the converse positions give rise to difficulties proceeding from a backward direction of the chin. It is ever to be borne in mind, that, so far as

the mechanism of delivery is concerned, the mental pole of face presentation corresponds to the occipital pole of vertex presentation. To make this more perspicuous let us say that, as in vertex presentation delivery is greatly facilitated, and its dangers diminished by flexion of the head which advances the occiput and finally brings it to the pubic arch, so in face presentation it is rendered

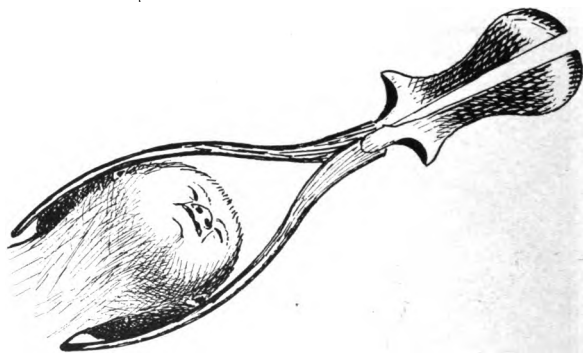


FIG. 27.—FACE ROTATED FROM R. M. P. (FIRST) POSITION INTO TRANSVERSE PELVIC DIAMETER.

less difficult and dangerous by extension of the head, which advances the chin and brings it at last to the same location. To accomplish such movements then, in these obstinate cases, should be our effort in forceps delivery.

Mechanism of Mento-Posterior Positions.

—The two difficult positions of face presentation being the first and second, we will consider them in advance of the others.

In the first position of the face the mental

pole of the long diameter is directed backward and toward the right. As it will be impossible so to apply the blades that the concavity of the instrumental curve shall be addressed to the chin, the first application is necessarily a compromise. The left blade, directed by the fingers of the right hand, goes directly to

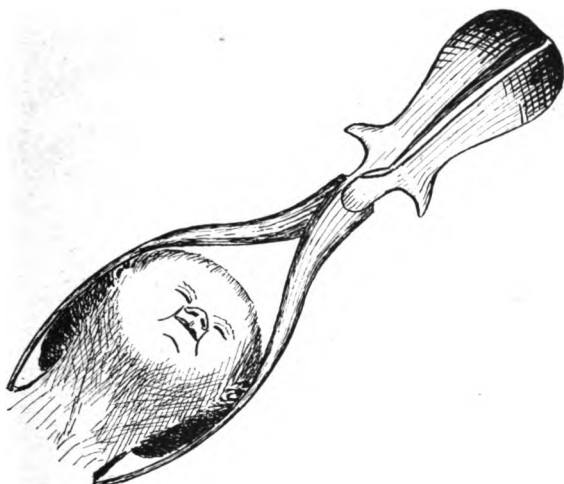


FIG. 28.—FORCEPS AFTER RE-APPLICATION IN ROTATION FROM R. M. P. POSITION.

its position on the left side of the head. The second blade requires an extensive spiral sweep, more difficult to be made than in vertex presentation, owing to a less uniform surface over which the blade is required to glide. The necessary sweep is aided materially from the start by the fingers which lie in the vagina. When fully applied, the con-

cavity of the instrumental curve looks toward the frontal pole of the long facial diameter. Rotary effort is made during traction, until the direction of the long facial diameter is made to correspond to the transverse diameter of the pelvis. The blades should then be removed and reapplied with the curve looking in the opposite direction, to accomplish which



FIG. 29.—ROTATION COMPLETE.

purpose the left blade will be required to make an extensive spiral sweep, while its fellow goes at once into position. Rotation is then completed, the chin brought under the pubic arch and the delivery consummated.

In the second position, the chin lies backward and toward the left; the forceps are applied with the curve at first looking toward the forehead; rotation is carried as far as the

transverse of the pelvis; the instrument is removed and reapplied so as to face in the opposite direction; rotation is completed, the chin comes under the pubic arch and the delivery is brought to a close.

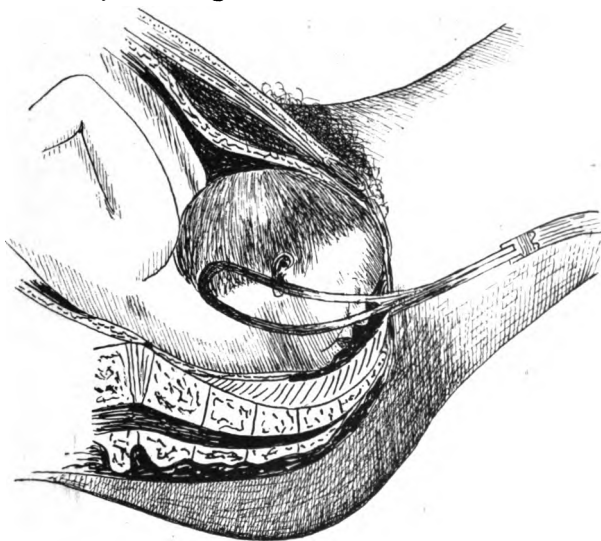


FIG. 30. — SHOWING EXCEEDING DIFFICULTY AND DANGER OF A MENTO-POSTERIOR TERMINATION OF LABOR.

It is unnecessary to add that, to avoid traumatism, every step of the operation must be taken with the greatest caution.

The difficulties and dangers attending labor when the occiput in a vertex presentation, persists in retaining its backward direction, are considerable; but they do not compare with those which wait upon the woman, when, in a face presentation, the chin refuses to come to

the pubic arch. Not only is the perineum greatly endangered, but extensive traumatism of the pelvic floor is sure to result. It is, then, of the utmost importance that the rotation which has been described be insisted upon. The difficulties of rotation in face presentation are greater than those in vertex presentation, and the demand for exercise of caution is correspondingly increased.

Mechanism of Mento-anterior Positions.—Mento-anterior positions are in the same relation to easy labor in face presentation as are occipito-anterior positions in vertex presentation. Rotation is but moderate and is accomplished with comparative ease. Should the forceps be required, with but a single application delivery can be safely accomplished. In L. M. A., or third position, the left blade is applied to the right side of the head by an easy movement, while the right blade is required to make an extensive spiral sweep to reach the opposite side. The chin is brought to the pubic arch and delivery terminated.

In the R. M. A., or fourth position, the left blade reaches the right side of the head by an extensive sweep, while the right blade glides easily into place. Rotation is toward the pubes.

These are fortunate positions of the face.

Spontaneous Rotation in Unfavorable Positions.—I may be permitted a few comments in this connection on the possibility of

spontaneous rotation in cases of occipito-posterior and mento-posterior positions.

In one of the national meetings of the dominant school, held a few years ago, in a discussion of the management of occipito-posterior positions, it was maintained by the majority of the participants that spontaneous rotation forward of the occiput is a rare occurrence, and that, accordingly, upon recognition, it is the duty of the accoucheur to interfere in an operative way. Some insisted that he should at once practice manual rotation, while others held that delivery should be made with the forceps, preceded or not by forcible rotation. One or two speakers expressed a great horror of instrumental rotation, proceeding from fear of laceration of the pelvic tissues, and destruction of fetal life from torsion of the neck. This discussion disclosed what I regard as a misunderstanding of the usual phenomena attending such deliveries, and the dangers growing out of artificial rotation. The truth is that spontaneous rotation forward of the occiput does occur, not occasionally, but generally, provided the condition of cephalic flexion be maintained and slight solicitation of the proper movement be offered by means of a finger behind the occiput, or in the V of the posterior fontanelle. This being true, why subject the woman to the unnecessary danger and suffering accompanying the manual and instrumental intervention proposed?

In a recent case wherein I performed instrumental rotation, the physician who called me to his aid expressed great fear that such a movement would destroy fetal life. The woman had been in labor for twenty-six hours, and the child's vitality was doubtless measurably impaired, and yet, on delivery, fetal respiration was promptly established, without artificial aid. I have performed the operation in many instances, and have no cause to regret having done so. Two such cases have fallen into my hands within a period of ten days. The truth is, that, in most cases, the trunk is made to turn more or less on its long axis by enforced rotation of the head; but, should the trunk fail to do so, the chin in face presentation, or the occiput in vertex presentation, can be made to rotate one-third of a circle without serious danger.

Concerning maternal injuries from artificial rotation, I can truthfully say that I have never found any; while, on the other hand, the perineum has often been saved.

Spontaneous rotation in mento-posterior positions is not readily secured by the natural efforts, even when given digital aid, nor is it easily enforced with the forceps; yet my efforts in such cases have, in one way or another, always been crowned with success.

Application to the Breech.—Obstetricians are not in entire accord with respect to use of the forceps upon the breech, some maintain-

ing that the form of the latter is in no way suited to safe and effectual forceps delivery. By these objectors the blunt hook and the fillet are regarded as the proper instruments for use. Notwithstanding the disapproval with which this innovation has been met, I confess my prepossession in its favor. To be sure there is some force in the strictures which have been made, especially from a theoretical standpoint; but it is mainly dissipated by an

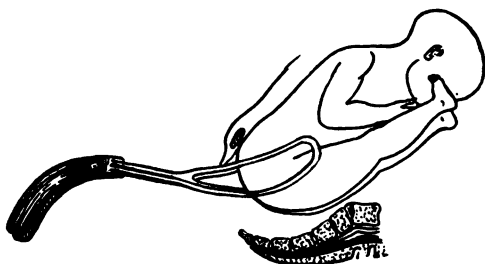


FIG. 31. — PROPER APPLICATION OF FORCEPS TO THE BREECH.

appeal to practice. The only stout objectors with whom I am acquainted are those who have never made a practical application of the recommendation.

It is highly essential that we be as exact in our methods of adjusting the forceps in breech presentation, as we are in presentations of the vertex and face. The most essential rule is always to seize the breech over the poles of the bi-trochanteric diameters. Failure to do this will work serious harm to the fetus and

render futile our most strenuous efforts. When so applied, the points of the blades sink into the spaces between the thighs and the abdomen, giving a hold which is sufficiently firm to admit of ample traction. It is important to remember, however, that the cephalic curve of some forceps is not sufficiently acute, when the blades are separated to the distance required in such a delivery, to

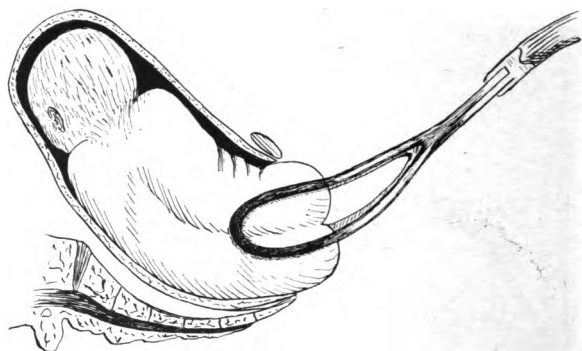


FIG. 32.—IMPROPER AND DANGEROUS APPLICATION OF FORCEPS TO THE BREECH.

maintain the necessary hold. This may be a just explanation of the failures which some report in attempts at delivery of this kind. Then, too, we should bear in mind that the instrument is a tractor in these cases only by virtue of the points of the blade, which sink into the spaces mentioned, and exert their force upon the principle of the fillet. The effect of this is to cause the instrument to descend under traction, exposing a considera-

ble part of the blades, and giving to one the false impression that it is about to slip off altogether.

As a result of my own experience, I am led to believe that the forceps, thus applied, is less likely to inflict serious injury upon the fetus than is the blunt hook; while the fillet is so extremely difficult of application, when the breech lies high, that it cannot be recommended to the ordinary practitioner.

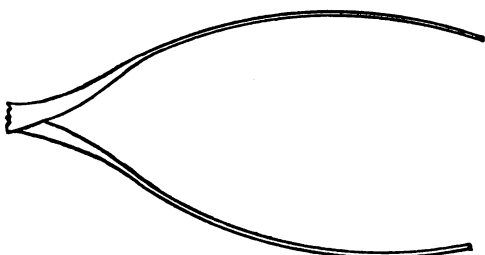


FIG. 33.—SHOWING INSUFFICIENT CEPHALIC CURVE:
BLADES MODERATELY OPEN.

Mechanism of Different Breech Positions.

—When the position of the breech is clearly recognized there should be no especial difficulty in getting the blades properly adjusted. In the first position, the left blade will glide easily to its place, while the second will be given a sweep similar to that used in cephalic presentation, in order to reach the left trochanter, which lies forward and toward the right. In the second position, the dorsum being forward and toward the right, the left blade will be required to sweep well anteriorly

in order to reach the right trochanter which lies toward the left acetabulum. The second blade will go easily into position. In the third position, the dorsum being backward and toward the right, the left blade will easily find the left trochanter, which lies backward and toward the left, while the right blade will be given an extensive sweep. In the fourth position, the dorsum being backward and toward the left, the left blade will make the

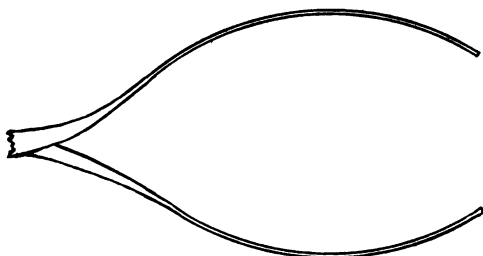


FIG. 34.—SUFFICIENT CEPHALIC CURVE.

spiral sweep in order to reach the left trochanter, which is directed forward and toward the left, and the right blade will go at once to its proper position.

No extensive rotation is required in these cases, and since our hold is not upon a hard and slowly-molded part, like the cephalic extremity, it may be undertaken at any time during descent, though it matters but little whether the movement be completed or not.

In the two dorso-posterior positions it is important to remember that the trunk should

be rotated as it passes the vulva, so as to cause the after-coming head to engage the brim in an occipito-anterior position. This is a matter of the greatest importance.

Application to the After-coming Head.—

In my own practice I have rarely had occasion to resort to this use of the forceps, as saving of time made it wiser, I thought, to effect rapid delivery by means of traction applied through the body of the child, firm hold being had upon the lower extremities. I need not add that traction so applied must be made in a direction varying with the situation of the head; longitudinally, or nearly so, when it is passing the brim, and at right-angles to the woman's body when it is emerging from the outlet. Still I do not deny that it is occasionally wise to have speedy recourse, in these perplexing cases, to the forceps.

As the minimum of time is the essence of successful endeavor in all cases of head-last labor, the forceps should be in readiness for possible use, and when brought into requisition should be applied with the utmost dispatch. The body of the child is to be held well forward by an assistant, provided the occiput be addressed to the pubic arch, and the forceps should be applied by the cephalic mode, which, in case rotation has been completed, now practically becomes also the pelvic, and traction made much as in head-first cases. Should the occiput happen to be lying back-

ward, it is well to put the woman into the lateral posture, carry the body backwards, slip on the forceps with the curve looking forwards, and effect delivery. It will be necessary

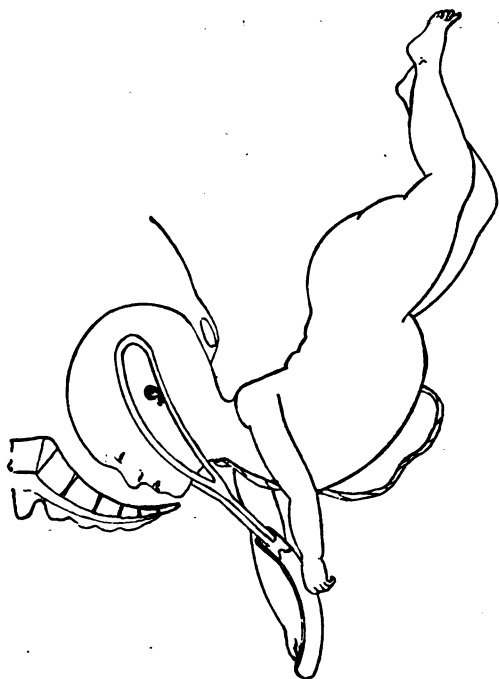


FIG. 35—FORCEPS TO THE AFTER-COMING HEAD.

to exercise unusual care in such cases, especially when the occiput lies posteriorly, to avoid possible traumatism from the points of the blades. The small forceps can be used with greater safety, though there is no reasonable excuse for injury from the large instru-

ment. Some operators prefer to apply the forceps in these cases with the curve turned away from the pubes. This, of course, means inversion of the instrument; but, as the perineum here becomes the axis of extractive rotation, the usual objection to such an application does not hold.

CHAPTER VI.

INDICATIONS FOR THE FORCEPS.

TURNING now from this brief study of the mechanism of forceps delivery let us give attention to a practical application of what has been learned. Theorize as we will, we should ever remember that golden truths, medical and surgical, are found only in the crucible of clinical experience.

The conditions which point to the advisability of intervention with the forceps are various, and the situation of the head at the time when the necessitating conditions arise differ in some important respects.

Since it has been made clear that the *accoucheur* ought to have at command two modes of application, choice between which is always to be determined by the situation of the head, I will make a corresponding clinical division.

Forceps at and Above the Brim.—Most prominent among the demands for use of the forceps by the pelvic mode at the brim or above, are those growing out of tedious labor. In some of these cases the tediousness may be mainly due to contraction of the pelvis, but in most instances it is dependent on some anomaly of the expulsive forces. The pains

are often severe, and return at short intervals, until at last the uterus takes on vehement and tumultuous action, extorting from the patient cries and tears, but without producing the looked-for effect in the form of progressive and reasonably-rapid dilatation of the os. Occasionally labor is continued in this manner for many hours, and even for days. That the pains are not what may properly be designated as "false," is evidenced by the regularity of their return, their persistence and their coincidence with uterine contraction.

We should not hasten to interfere in cases of this character, preferring first to accord the natural efforts the maximum of what may be regarded as reasonable time, believing that a different course augments the dangers to both mother and fetus; but there is a limit beyond which they ought not to be allowed to pass, because of the constantly-increasing danger of uterine inertia.

Contracted Brim.—Refusal of the head to enter and pass the superior strait, owing to disproportion in diameters, creates a frequent demand for the forceps by the pelvic mode. This disproportion most commonly proceeds from a minor degree of contraction of the pelvic diameters at the brim. The particular diameter most likely to be involved appears to be the conjugate.

Again, unusual ossification of the cranial bones may operate to produce a similar result.

From the operation of such a cause the effect is the same, uterine contractions being insufficient to drive the head through the inlet.

Cases of this kind demand most careful study and the exercise of consummate discretion. To interfere too soon, involves powerful traction, with consequent contusion and laceration for the mother, and unsafe compression of the cranium for the fetus; while, to delay too long, means exhaustion, possible devitalization of tissue, and great danger to fetal life. In any event the head should be given a reasonable time in which to adapt itself to the form of the pelvic brim. "In the morning," says Blundell, "you apply your forceps, but cannot extract the cranium. No dangerous symptoms manifesting themselves, you wait till evening, and then try the forceps again; and now, the head moulded by compression and the pains so as to adapt it to the passage on this second application of the forceps, a living fetus is abstracted." Too often are forceps deliveries attempted at too early a period in the labor. More than once I have witnessed destruction of fetal life from such an avoidable cause.

When dystocia arises from a narrowing of the pelvic diameters at the brim, Walcher's position has been found to facilitate delivery. It is only seven years since this position was brought to professional attention, and it has been little used by the general practitioner.

It is secured by placing the woman across the bed, with her hips at its edge, and the feet resting on the floor from a height which will tilt the pelvis forward. A pad in the hollow of the back increases the patient's comfort. The design of the position is to exert traction on the anterior part of the pelvis, which,



FIG. 36.—WALCHER'S POSITION.

owing to relaxation of the sacro-iliac synchondroses, is supposed to augment the *conjugata vera* of the brim. I am inclined to believe that passage of the pelvic brim is facilitated in some measure also by a better adjustment of the head thereto, derived from the pelvic tilt effected by the exaggerated extension of the thighs which the position involves.

Eclampsia.—In this class of cases we find a frequent demand for the forceps according to the pelvic mode. It may be that the woman suffers repeated seizures before the advent of labor, or immediately after the pains have been established. The os, of course, is closed, or at the most is only moderately patulous, and yet the clinical indications point clearly and emphatically to the advisability

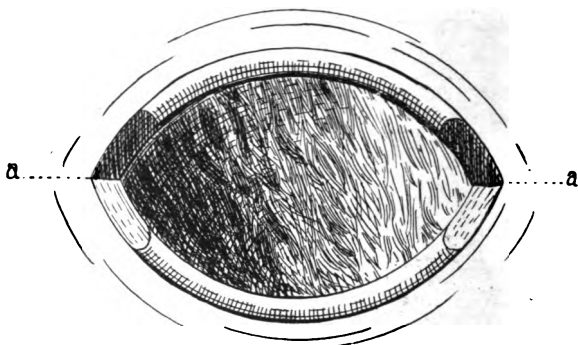


FIG. 37. - SHOWING AT *a* INCISIONS OF THE *Os-Uteri* MADE TO FACILITATE DELIVERY IN CERTAIN CASES OF TITANIC RIGIDITY.

of securing immediate uterine evacuation. I would not be understood as advocating *delivery forcée* for all such cases, though I am free to confess that such treatment appears advisable in most of them. When this is true, and we decide to act upon the indications, manual dilatation and use of the forceps constitute the proper procedure.

Placenta Previa.—It is only occasionally, in this comparatively rare but exceedingly

dangerous complication of labor, that the forceps can be used to advantage. Only when the implication is but partial, so that the head can be conveniently reached by turning aside the placental margin, is forceps delivery advisable. I am not at all in sympathy with the older recommendation to undertake forceps application through a perforation of the



FIG. 38.—KNEE-CHEST POSITION.

placenta. Modern methods have greatly reduced the mortality of both mother and child, and have rendered practically obsolete methods that were at one time in great favor.

Transverse Presentation. — Those unfamiliar with the management for these cases which I am about to propose, may be surprised that the forceps receives mention in connection with a presentation upon which no convenient hold can be taken by the instru-

ment, and in which both extremities of the fetal oval are so far from reach. Now, for the solution of this proposal, let me say that it has been found wholly practicable, in favorable instances of transverse presentation, to place the woman in the knee-chest position, or, better still, perhaps, in the Trendelenburg posture, effect cephalic version and immedi-

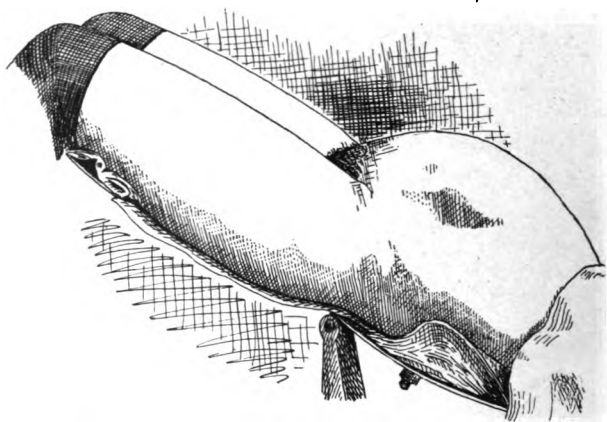


FIG. 39.—TRENDLENBURG POSITION.

ately ensure a permanency of the acquired presentation by application of the forceps. It does not follow as a matter of necessity that the labor be at once terminated, though this would be our own course; but the head should at least be held within the embrace of the instrument until it has fairly engaged the brim.

Prolapse of the Funis.—This is one of the rare complications of labor, and it is in only

a moderate proportion of such cases that use of the forceps at the brim, or above, is necessitated. It is a complication not directly inimical to the woman's safety, but very decidedly so to fetal life. It often makes its appearance in the early part of labor, but may

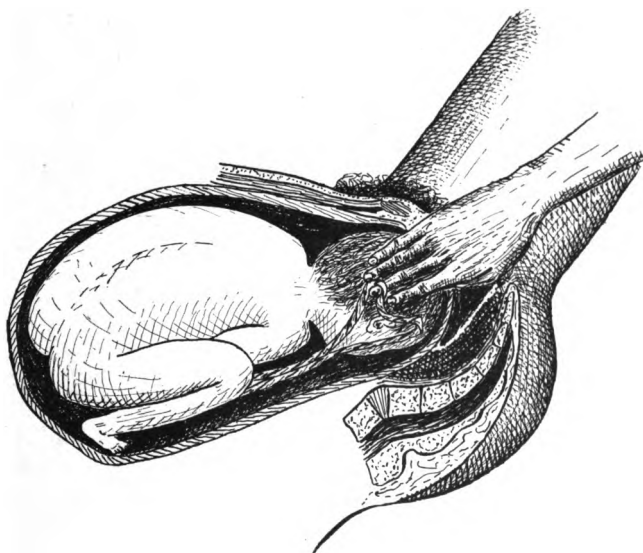


FIG. 40.—REPOSITING A PROLAPSED CORD: TRENDLENBURG POSITION.

be entirely overlooked until the head has descended into the pelvic cavity. When discovered, while yet the head is mobile above the brim, or, while it can be disengaged, if pulsation in the cord be still vigorous, the woman should be placed in the knee-chest, or in the Trendelenburg posture, the loop of cord car-

ried deep into the uterine cavity, beyond the danger of compression, the forceps applied and delivery effected with reasonable dispatch.

These comprise the chief conditions under which a demand for the forceps during the

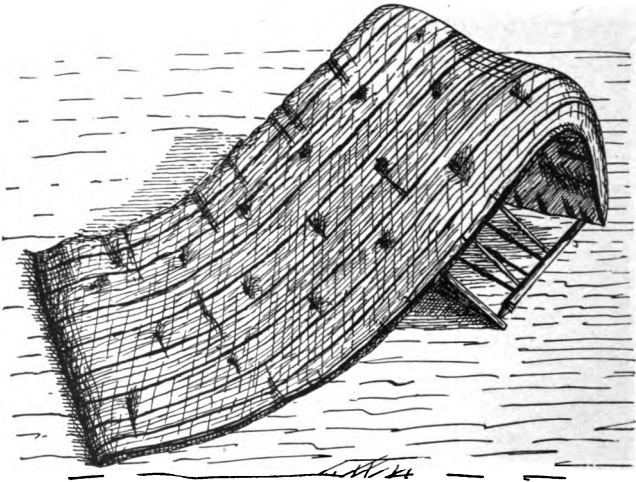


FIG. 41.—IMPROVED METHOD OF SECURING TRENDLENBURG POSITION.

first stage of labor, or the early part of the second, is strongly developed.

Conditions Which Call for the Forceps in the Pelvic Cavity and at the Outlet.—In general the condition which calls for forceps in the pelvic cavity, is arrest of the head. It may be due to extension and consequent involvement of excessive cranial diameters in certain pelvic diameters, or to equable contraction of

the entire pelvis. An arrest of this character we speak of as "incarceration," and look to the forceps as the chief means whereby we may hope for relief. For this reason the intelligent accoucheur is on his guard during labor to prevent extension of the head, while he always carefully estimates the progress being

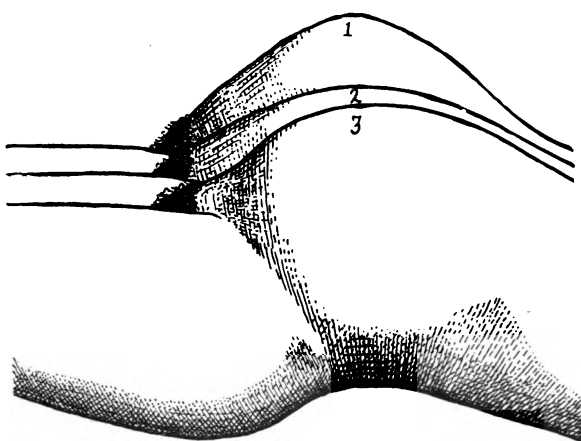


FIG. 42.

- | | | |
|----|------------------------------|------------------------|
| 1. | Outline of Pregnant Abdomen, | Erect Position. |
| 2. | " | " Horizontal Position. |
| 3. | " | " Trendelenburg Pos'n. |

made, fully impressed with the dangers so liable to supervene upon protracted delay of the head in its passage through the pelvic canal. The main danger to the mother connected with incarceration of the head, and hence that from which she is to be extricated by means of the forceps, is that of devitalization of the soft pelvic tissues so long com-

pressed by the presenting part. Structures thus endangered are the cervix, the recto-vaginal septum, the urethra and the vesico-vaginal partition. *Fistulæ* arising from such a cause were exceedingly common before the forceps came into frequent use. We now regard absolute arrest of the head in the pelvic cavity, evidenced by its failure to advance under repeated uterine effort, as a distinct call for instrumental delivery. When relief is not afforded, there ensue venous stasis, œdema, and finally destruction of tissue vitality within the compressed area.

Uterine Inertia.—When the head is delayed in the pelvic cavity or at the outlet, the efficient cause is not always found in obstructive incarceration, but sometimes in uterine exhaustion. It may be that the first stage of labor becomes so unduly prolonged as to precipitate inertia soon after the propulsive pains have set in. When this occurs the contractions become less frequent and forcible until the completely-exhausted uterus settles into spasmodic and ineffectual effort. In other cases the early part of the second stage is so difficult, especially in women possessing feeble powers of endurance, as to bring about a similar condition.

The dangers associated with uterine inertia in the second stage of labor are primarily those accompanying incarceration due to disproportionate diameters, but less pronounced. The

pelvic tissues are not often so severely compressed, and therefore the same urgency for delivery does not exist. It is important, then, that we make a clinical distinction between the two causes of protracted delivery. In these cases release is more easily affected; but, in securing it, the woman is menaced by peculiar dangers. We may easily apply the forceps and as easily extract the head, only to find that the atonic condition of the uterus has been carried over into the post-partum state, thereby establishing the condition essential to post-partum hemorrhage. For this reason the discreet operator will delay his intervention, in the absence of any unusual exigency, meanwhile stimulating the uterus to renewed effort by every reasonable means. When he has freshly aroused uterine energies he can safely proceed to empty the organ.

Refusal to Rotate.—Occasionally, in occipito-posterior and mento-posterior positions, there is absolute refusal of the head properly to rotate. When this is true, the head sometimes gets wedged into the outlet and, in the interest of both mother and child, there is a loud call for conclusion of so difficult and dangerous a delivery. It is not often that the head is held in this situation by the embrace of bony structures, but, having been stranded at last through uterine exhaustion, the tissues swell and the secretions dry, until the part becomes firmly held. There may be recurrent

uterine contractions, but they are feeble and poorly calculated to bring relief by completing the expulsion. In such a case it is usually advisable to perform episeiotomy and then draw the head through the vulva without an effort at

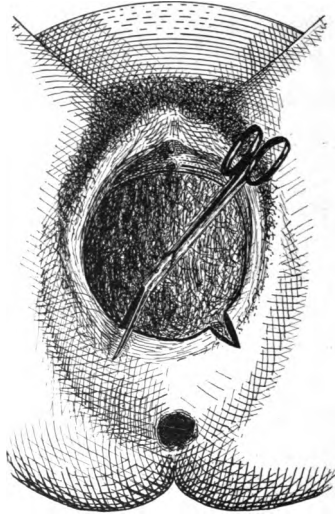


FIG. 43.—EPISEIOTOMY.

rotation. To forcibly rotate under such conditions would be extremely hazardous. In emergencies of this character we must be guided by the character and degree of intensity of the concurrent symptoms. No hard-and-fixed rules for management can be formulated.

CHAPTER VII.

MISCELLANEOUS SUGGESTIONS.

Dangers Associated with Use of the Forceps.—Any form of intervention carries with it a degree of danger arising from septic infection, which is determined by the susceptibility of the patient and the thoroughness of the anti-septic precautions. There is no doubt that some patients more readily take on septic infection than others. This has been clinically demonstrated in many instances; but we have not yet learned how to discriminate with any degree of exactitude between them. Why bacteria should in one case multiply most prodigiously, and in another be starved out at every point, we shall probably never fully understand. Personally, I have no doubt that the mental attitude of the individual is a powerful determining factor. In hospital practice alone have I met any losses from puerperal septicæmia, and even there among those only who were so overcome by grief and shame that life to them had no remaining attractions, and death was welcome. It is to be hoped that the modern theories of certain psychologists may prove to be well founded, and invulnerability become the available heritage of all.

No one who carefully studies the details by which we seek to prevent the introduction of septic germs, can doubt that in every case, exposure to infection, despite all precautions, is appallingly ample. Absolute sterility of everything which comes in contact with vulvar and vaginal surfaces is probably impossible to obtain. This being true, if we are to err at all, let us do so on the side of precaution.

Infection is mainly dependent upon a solution of continuity at some place in the genital tract, which gives a point of entrance. Lacerations of the os, either large or small, are probably common to all parturients, though in a comparatively small percentage do they become so extensive as to attract attention. I need not add that what is true of the os-uteri is true also of the vagina and vulva.

While lacerations frequently, if not uniformly, occur in labors which have pursued a natural course throughout, it cannot be denied that an unskillful use of the forceps is a prominent factor in the multiplication and deepening of such tears. What I mean to say is, that in every case, no matter how scrupulously conducted, there is not only ample opportunity for microbial access to the genital tract, but also many favorable points within the genital tract for infection. It follows, then, that while use of the forceps does often

add to the number of lacerations, it does not necessarily augment to any material degree the danger of septic inoculation.

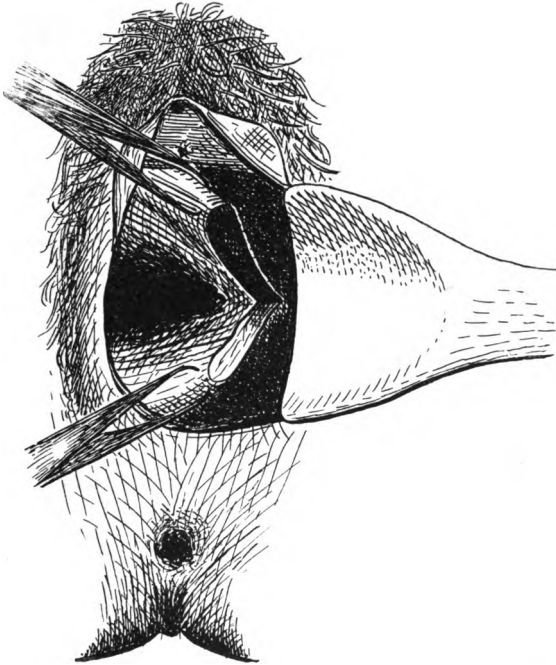


FIG. 44.—MODE OF EXAMINING CERVIX AFTER INSTRUMENTAL DELIVERY. LACERATION IN POSITION FOR SUTURING.

Injury is frequently done the os-uteri by careless introduction of the forceps. One case has come to my knowledge in which it is evident that the posterior wall of the uterus was so badly cut in this manner that delivery resulted in a uterine laceration which broadly

opened the peritoneal cavity. Again, the cervix is many times lacerated by traction, undue in degree and wrong in direction. The vagina suffers in a similar way. One need only pass his finger into the rectum during a forceps delivery to become convinced that the



FIG. 45.—TEMPORARY MARKING BY FORCEPS IN
"PELVIC APPLICATION."

edges of the blades severely press the septum, especially when the instrument is obliquely applied, and that traction too early made in an anterior direction may easily destroy the integrity of that structure, so essential to pelvic health, namely: the *lavator-ani* muscle. Furthermore, by bringing the head too rapidly through the vulva, the soft structures of that

part, taxed beyond their tensile strength, are prone to yield to a most disastrous degree.

The foregoing brief account recites the main dangers incurred by the mother in connection with the use of forceps; but we must not forget to consider also the safety of the child. To it the chief danger arises from cranial com-



FIG. 46.—TEMPORARY MARKING BY FORCEPS IN
"CEPHALIC APPLICATION."

pression. It is always advisable, as I have elsewhere said, to regulate the degree of compression to correspond with the degree of traction. It follows, therefore, when it becomes necessary to apply a high degree of extractive energy, that there is a demand for a degree of compression which seriously endangers fetal life. But the operator should ever remember

that compression is to be made only during traction effort and is always to cease with it. The fetal cranium is surprisingly tolerant of compression, provided such compression be interrupted; but death is the almost certain result when it is uninterruptedly protracted. In



FIG. 47.—LEG-HOLDER AS IT APPEARS WHEN APPLIED.

the intervals, then, between traction efforts, the operator's grip should be relaxed, so that the vital forces of the child may recover functional activity and be prepared for each recurring ordeal.

How to Maintain the Obstetric Position.—The American posture for instrumental delivery is the dorsal, and, preferably, the litho-

to my position; but the maintenance of it during extraction proves a source of exceeding annoyance to the operator. In my practice I found that available assistants are often hard to secure when most needed, and, in order that I might acquire better control of my patients, some eight or ten years ago I designed a leg-holder which has admirably fulfilled its purpose. Various devices intended to supply the same demand have been put upon the market, but, for ease of adjustment, for comfort of the patient, for adaptability to a variety of posi-

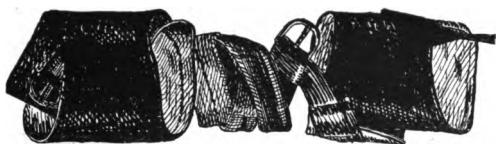


FIG. 48.—LEG-HOLDER ROLLED FOR THE OBSTETRIC BAG.

tions, and for convenience of carrying, the one here illustrated has no equal. After having tested it in several hundred cases, I can unqualifiedly recommend it.

The Maximum Time of Forceps Delivery.

—The duration of an average case of forceps extraction is probably fifteen or twenty minutes; but the maximum may run into hours. I have never found it advisable to continue traction effort more than two hours, although aware that some obstetricians have had the instrument on for double that time. Since the introduction of symphysiotomy, very

tedious and difficult forceps cases have been diminished in number.

As the result of long-continued traction we usually have fetal death, besides which there are maternal lacerations and contusions of a destructive nature. To remedy this condition of things, or, more properly, to prevent the frequency of such accidents, we have before us two alternatives, one of which is to delay

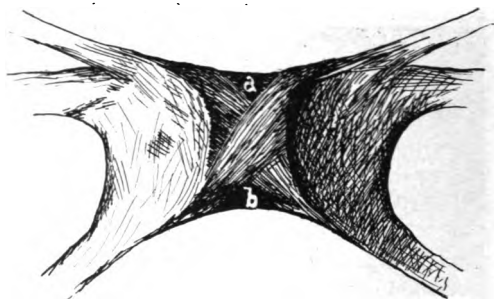


FIG. 49.—SHOWING LIGAMENTS DIVIDED IN PUBIC SECTION; *a*, SUPRA-PUBIC LIGAMENT; *b*, SUB-PUBIC LIGAMENT.

intervention to the latest possible moment consistent with safety, and the other is to perform symphysiotomy when it is found that the head is so greatly out of proportion to the size of the pelvis as to necessitate a protracted, and possibly futile, effort with the forceps.

Another question of importance arises in the same connection, and that concerns the degree of traction allowable in forceps delivery. The novitiate is sometimes astonished at the delivery of a living child when power-

ful traction efforts have been necessitated, not realizing that the saving factors have been intelligent application of traction energy, and the minimizing of its duration. If we find that the head yields under traction efforts, and that some progress is being made in the delivery, even though it be moderate, there is usually no occasion greatly to increase the

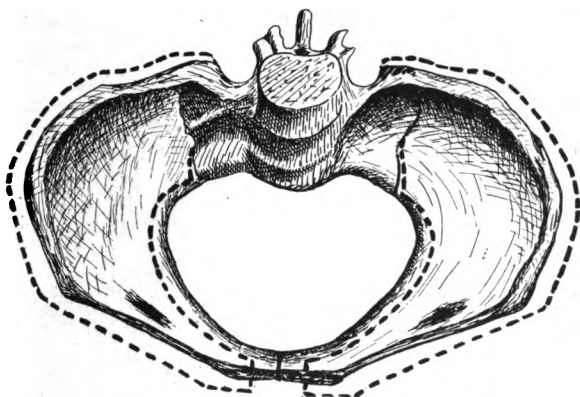


FIG. 50.—SHOWING SEPARATION OF THE INNOMINATE BONES AFTER PUBIC SECTION.

extractive energy; but if we find the resistance pronounced and that the traction already repeatedly applied has availed little or nothing, we are undeniably justified in steadily increasing the vigor of the *vis-a-fronte* until the desired effect is produced, even though it may bring into use all the strength at our command.

The operator should always bear in mind, however, that powerful traction efforts should

never be applied when the *os uteri* or the vulva constitutes the main resistance. Moreover, it is highly essential that traction should always be made in the axis of the parturient canal.

Clinical Indications as to Time for Rotation.—I have elsewhere said that it is both futile and dangerous to attempt rotation after the head has engaged the brim, until it sinks so low in the pelvic cavity as to become entirely free from the trammels of the inlet; but, inasmuch as it is impossible to press our examination *per vaginam* above and beyond the presenting surface, we should become familiar with the clinical indications which point to the completion of the necessary descent. Dr. Collins H. Johnston says he has seen such an expert as Leopold apply forceps to a head which he thought had entered the pelvic cavity, only to find it still engaged in the pelvic inlet.

Attentive observation of the phenomena of labor shows that it is only after the movement of direct descent has been accomplished, and the presenting part comes to press with energy on the pelvic floor, bulging it and opening the *rima vulvæ*, that rotation takes place. Even then the rotary movement accomplished during each pain is fragmentary, it being completed only when the cranium exposes its crown within the circle of the vulva. From a study, then, of the phe-

nomena of normal labor, we learn that the time to enforce rotation is when the head has been drawn well down to the vulva, and when, under traction, its presenting part begins to dilate the outlet.

Question of Removal of the Forceps Before Delivery of the Head.—The answer

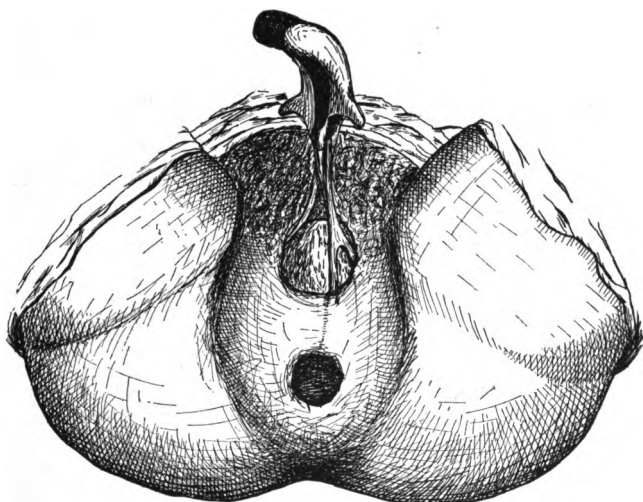


FIG. 51.—SHOWING POSITION OF THE BLADES, AFTER ROTATION, IN A "PELVIC APPLICATION," MAKING ADVISABLE REMOVAL OF THE INSTRUMENT BEFORE COMPLETION OF DELIVERY.

to the question is always to be determined by the conditions. If the instrument has so embraced the head as to endanger the pelvic tissues at the outlet, it ought certainly to be removed; but if, on the other hand, it is so applied as to give control of the part without

additional risk, it ought, with equal certainty, to be left in place until delivery has been completed.

When the forceps is applied by the pelvic mode, and the seizure, as usual, is over the poles of the long diameter, rotation always turns one of the blades toward the rectum and

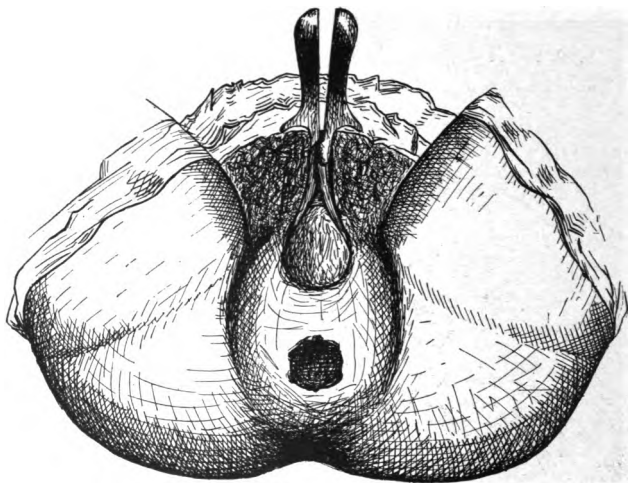


FIG. 52. — ROTATION COMPLETE: CEPHALIC MODE.
FORCEPS NEED NOT BE REMOVED.

causes it to crowd the septum and perineum to a dangerous degree. To ignore this state of things, and, in pursuance of routine management, to leave the forceps unremoved, would be gross mismanagement. It is probable that cases of this kind do not represent more than twenty-five or thirty per cent of the whole number.

On the contrary, when the cephalic mode has been followed, and the blades lie upon the poles of the bi-parietal diameter, the conditions are radically different. The presence of the instrument in such a case does not interfere with suitable manipulation, and the blades do not endanger the structural integrity of the pelvic tissues. When this is true, it is my custom to let the instrument remain in place.

In conclusion I may say that the space occupied by the thin blades does not materially increase the circumferential demands laid upon the vaginal canal, and is scarcely worthy consideration in the estimate of danger to it or to the vulvar structures.

CHAPTER VIII.

FORCEPS DELIVERY IN PRIVATE PRACTICE.

IT is difficult for a hospital obstetrician, who has assistants and instruments and other conveniences at hand, to come down to the level of the ordinary practitioner in his descriptions of any form of operative intervention. Here, however, it is my intention to give a detailed account of obstetrical work as it should be done under the restricted conveniences of domestic life. It is unfortunate that a large share of the clinical drill received by students is required to be given within the walls of a hospital, where the prevailing conditions must always differ in some important regards from those which surround the practice of obstetrics in general. If in this CHAPTER I succeed in supplying in some degree the indicated deficiency, I shall feel well repaid by the time and effort expended.

When, in the course of labor it becomes wise or necessary to have recourse to the forceps, it is always advisable to secure the consent of the patient, her husband, or some other responsible person connected with the case. The accoucheur's views and convictions need but be plainly and forcibly stated to secure the acquiescence of those whose ap-

proval he seeks, provided they repose in him the confidence which ought always to be given one occupying so responsible a position. The patient herself need not be informed as to the precise nature of the procedure, and, indeed, the average patient cares not to know, praying only for speedy relief.



FIG. 53.—SHOWING CONVENIENT ARRANGEMENT OF BED FOR FORCEPS DELIVERY.

The operation having been decided upon, certain preparations are necessary. Let us assume that all antiseptic precautions have received careful attention, and now a final cleansing of the patient and the operator are the only personal precautions to be observed. The rubber bed-sheet on the side of the proposed operation, should be drawn over the edge, and its corners pinned so as to make a conduit for fluids to a slop-jar or other recepta-

cle set at the front of the bed. Protection should be provided for the carpet; instruments and other necessities should be placed within easy reach, and a chair set for the operator. The woman having been thoroughly anesthetized, is turned crosswise of the bed and her hips are drawn to its very edge. The leg-holder is then to be applied, the knees are to be separated to the desired extent, and some calm assistant is to be seated by the patient's side. The chief duty of the assistant will be to restrain too free and violent movement of the patient.

If the operator has assisted in any of these preparations after sterilizing his hands, he should again cleanse them in an antiseptic solution.

Before proceeding further, the room ought to be cleared of curious spectators, so as to avoid the development of unnecessary excitement over the contingencies which are liable to arise, and the misapprehension, and, perhaps, misrepresentation, so liable to ensue.

The forceps is taken in hand, one blade at a time, and duly applied. Sterilized vaseline may be used upon the hands, but I prefer to leave the aseptic blades unlubricated. Calmness and deliberation in an operator are always admired, because expressing confidence and self-possession; and they should always characterize his movements even when the exigencies of the case require dispatch. Violence

and brutality should be exploded from obstetric practice, and a tender regard and a considerate touch be substituted. If we are true physicians and surgeons we must feel an interest in the welfare of our patients which cannot fail to express itself in a mixture of gentleness with firmness, and reluctance with severity.

When in the course of delivery the presenting part has reached the vulva, the anesthetist should draw the woman away from the bed's edge far enough to give room for the child whose delivery is soon expected. Care in removal of the blades, either before or after escape of the head, is a matter of importance as contributory to the child's escape from disfigurement. Removal is always to be effected by reversing the movements with which the blades were applied.

A final word with regard to the conclusion of such a delivery. The woman being deeply narcotized by the anesthetic affords little or no aid in the delivery of the fetal trunk, for which reason it becomes necessary to bring outside aid to the rescue if we would save the child from jeopardy. Many fetal lives are sacrificed through neglect to do this. The hand of an assistant should be laid upon the fundus of the uterus and forcible pressure made in a downward direction, while the operator applies to the fetal head the maximum degree of traction consistent with safety.

As soon as the posterior axilla of the child can be reached, traction at that point should be substituted for traction on the head, and in this manner the second stage will be speedily and safely brought to a close.

The delivery having been concluded by removal of the placenta and membranes, and necessary repairs having been made, the leg-holder should be removed and the woman returned to her ordinary position in bed.

Such delivery may to some appear to be unnecessarily elaborate. It is well known that many untidy and reckless practitioners do not even change the patient's position, nor do they wash their hands nor boil their instruments; but we have no desire to be classed among them. The saying is old, but will never become trite, that "what is worth doing at all is worth doing well." Moreover, in a profession such as ours, where health and life are dependent on the results of our actions, routine should be shunned, dogmas laid aside, and we become the most teachable of all the students of natural phenomena.

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